

# **National Grid SA-COA** **PRODUCTION FILE**

**Contractor : ABB Contracting Co.**

**Project : SS 8709- 132/13.8kV in Alkharj City**

**Contract No : 11131113/00**

**Substation : 8709**

**Subject : 132Kv Busbar Protection Set-2 (+BBP2-4)  
Relay Panel-4**

**ABB**



POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Gridsa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : Assembly Drawing - +BBP2-4  
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

#### COVER SHEET

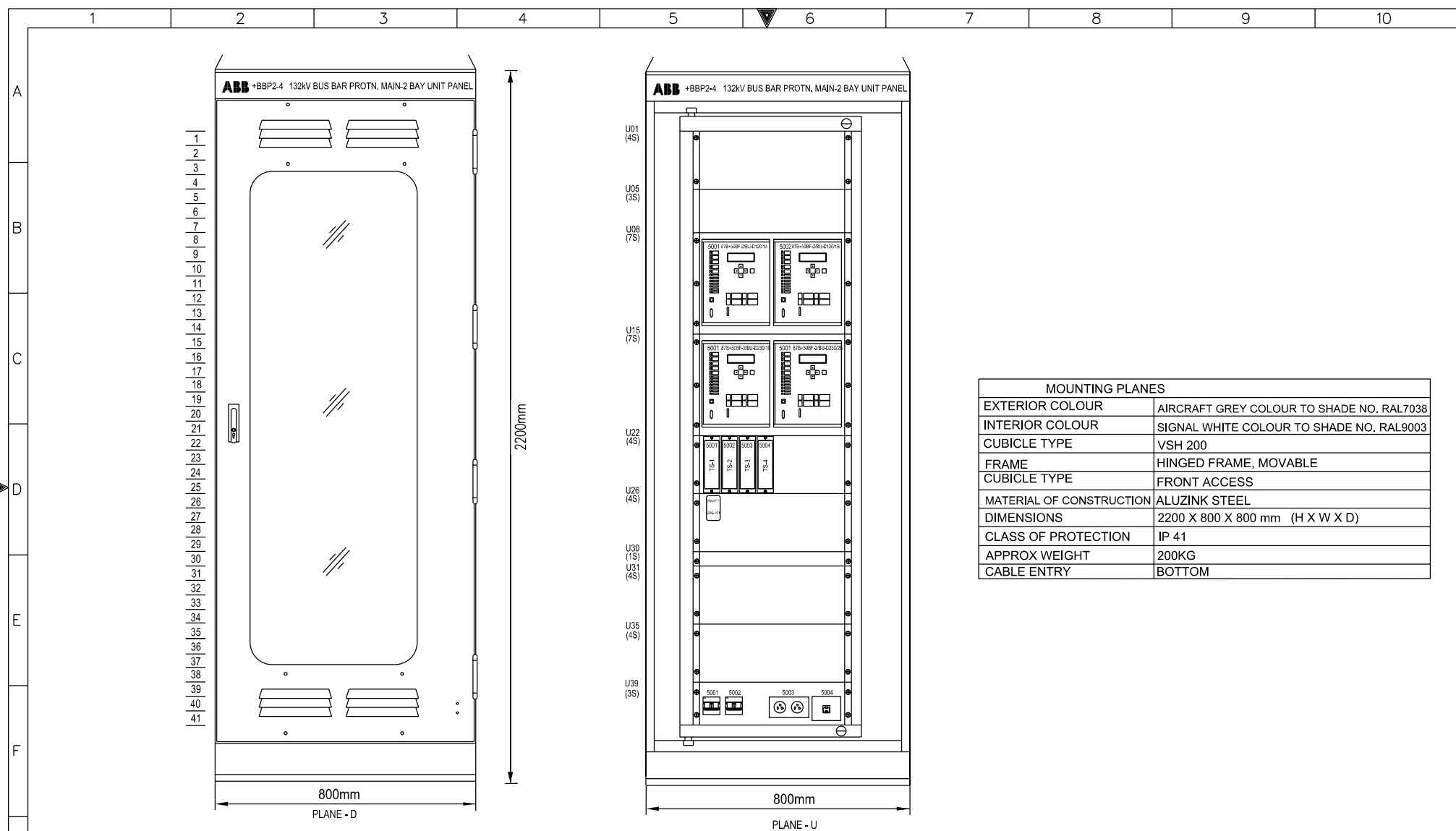
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4  
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323006	SHT 001	01

NG/D2-D (2012/01)  
DMS VECTOR NGD200

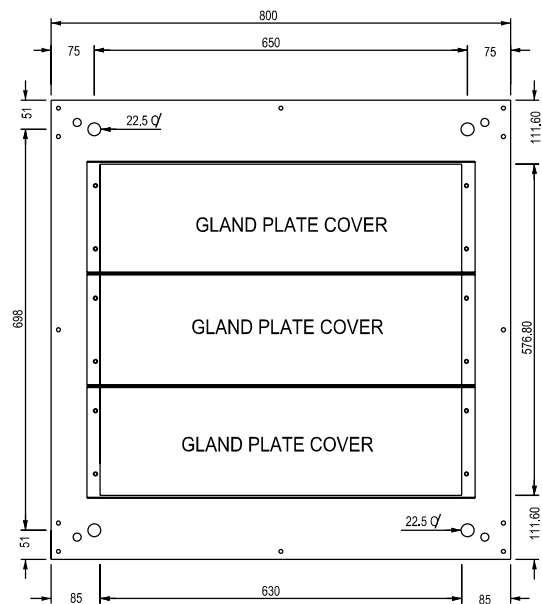


MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX WEIGHT	200KG
CABLE ENTRY	BOTTOM

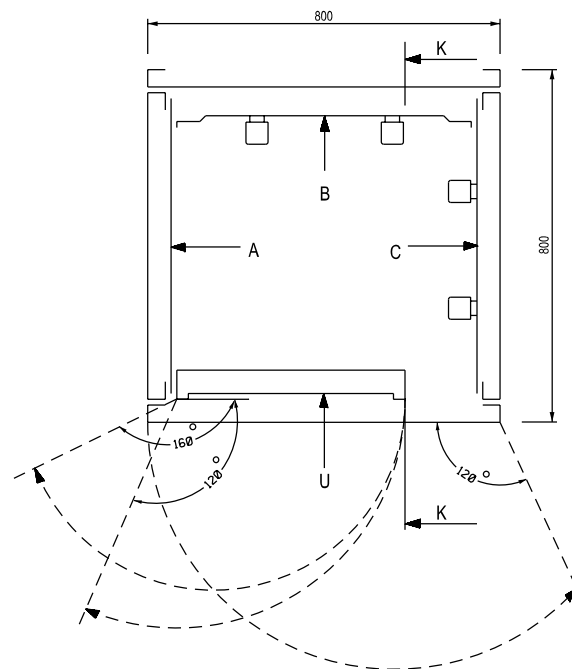
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		National Grid SA	
00	13 05	FOR APPROVAL		DATE STARTED 31.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		PLANT NO. C421	
								DRAWING NUMBER CD-323006	
								SHEET NO. SHT   CONT.	
								REV. NO. 01	



BASE PLATE/  
FOUNDATION



PLAN



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013 DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4  
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323006	G03   G04	01

NG/D2-D (2012/01)  
DMS VECTOR NGD200

	1	2	3	4	5	6	7	8	9	10
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C										
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TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL

ABB +BBP2-4 132KV BB/BF MAIN-2 PROTN. PANEL-2

800

28

U PLANE BOTTOM LABEL

ABB AUTOMATION CO. LTD

800

28

MANUFACTURING LABEL

**ABB** ABB Automation Co.Ltd.

PROJECT : National Grid SA S/S 8709

ORDER REFERENCE : 2875 RF S13656

YEAR OF MANUFACTURE: 2013

PANEL NO. : +BBP2-4

DRAWING NO. : S13656-CD-323007

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013 DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		-	C421	CD-323006	SHT  CONT
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA				G04 L00	01



POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Gridsa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : LIST OF APPARATUS - +BBP2-4  
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

#### COVER SHEET

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4  
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323006	SHT 1 CONT. L00 L01	01


NG/D2-D (2012/01)

DMS

VECTOR

NGD200

	1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	
	1	U08.5001	87B+50BF-2/BU-D120/1A	RELAY CUBICLE- +BBP2-4 FOR 132KV BB/BF MAIN-2 ACCOMODATING THE FOLLOWING			4	VSH 200	ABB		
		U08.5002	87B+50BF-2/BU-D120/1B	BAY UNIT FOR NUMERICAL BUSBAR PROTECTION WITH FOLLOWING		293,294		7SS523	SIEMENS	7SS5231-5CA01+1AA1	
		U15.5001	87B+50BF-2/BU-D230/1B	HIGH TROUGH-FAULT STABILITY EVEN IN CASE OF CT SATURATION.		295,296					
		U15.5001	87B+50BF-2/BU-D230/1B	NEUTRAL CURRENT CRITERION INSTANTANEOUS VALUES FOR FAULT RECORDING.		297,298					
		U15.5001	87B+50BF-2/BU-D230/2B	DISTURBANCE FREE AND FAST DATA TRANSFER TO & FROM CENTRAL UNIT		299,300					
				PHASE SEGRAGATED MEASUREMENT							
				REDUCE CT PERFORMANCE REQUIREMENTS							
				BUILT IN HUMAN MACHINE INTERFACE							
				BUILT IN BREAKER FAILURE FUNCTION.							
B				END FAULT PROTECTION FUNCTION							
				DISTURBANCE RECORDER							
				BINARY OUTPUT : 20							
				BINARY OUTPUT : 6+2-WD							
				FULLY NUMERICAL SIGNAL PROCESSING							
				RATED CURRENT : 1A							
				AUX. VOLTAGE : 60-250V DC							
				RATED FREQUENCY : 60HZ							
C	2	U22.5001	TS-1	TEST SWITCH FOR 87B+50BF-2/BU-D120/1A RELAY		293	4	MMLG02	ALSTOM	MMLG02 R1AA 0001D	
		U22.5002	TS-2	TEST SWITCH FOR 87B+50BF-2/BU-D120/1B RELAY		295					
		U22.5003	TS-3	TEST SWITCH FOR 87B+50BF-2/BU-D230/1B RELAY		297					
		U22.5004	TS-4	TEST SWITCH FOR 87B+50BF-2/BU-D230/2B RELAY		299					
	3	U26.101	74BF-2/D120	DUAL TARGET RELAY FOR 87B+50BF-2/D120 AND 87B+50BF-2/D230 DC SUPERVISION		234	1	RXSF 1	ABB	RK 271 019-AN	
			/74BF-2/D230	AUXILIARY VOLTAGE : 110-125V DC		239					
				CONTACT DATA : 1NO + 2NC							
				FLAG : SELF RESET,REVERSE							
D											
E											
F											
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS				
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4				
	00	13 05	FOR APPROVAL		DATE STARTED 31.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				
							INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
							-	C421	CD-323006	L01 L02	01



**نقل الكهرباء**  
 الشركة الوطنية لنقل الكهرباء  
 National Grid sa

NG/D2-D (2012/01)  
 DMS VECTOR NGD200

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	1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	
	5			MCB 2 POLE 6A, FOR DC SUPPLY		216	2	S282UC-K6	ABB	GH2820164R0377	
				WITH 2NC AUXILIARY CONTACT				S2-H02		S2C-H11L- 2CDS 200936 R0001	
		U39.5001	Q1	D120 ± BF2 SUPPLY							
B		U39.5002	Q2	D230 ± BF2 SUPPLY							
	6		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR		211	2	S202P-K10	ABB	2CDS 252 001 R0104	
				CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS				+S2-H02			
	7	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		211	2	USM45 & USMS45	LEGRAND	74140 & 74180	
C			C02	CONVENIENCE OUTLET 10A, 220V AC							
	8		C3	THERMOSTAT FOR SPACE HEATER, 5-60°C		211	1	SK 3110	RITTAL	SK 3110	
	9	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		211	1	EDF410	EDISON	EDF410	
	10		C7	ON/OFF SWITCH FOR SPACE HEATER		211	1	M2SS1-10B	ABB	1SFA 611 200 R1006	
D								MCBH-10		1SFA 611 605 R1101	
	11		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		211	1	LS30P13B02	ABB	1SBV 010213 R1202	
	12		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR		211	1	T-4	SUNON	SP-20W	
				127V AC, 60Hz SUPPLY, 20W							
E	13		SH	SPACE HEATER, 55W, 127V, 60Hz		211	1	IFZEK7580104	RICA	-	
F											
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS				
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4				
	00	13 05	FOR APPROVAL		DATE STARTED 31.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				
						INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
						-		C421	CD-323006	L02L03	01



**نقل الكهرباء**  
 National Grid SA  
 الشركة الوطنية لنقل الكهرباء

NG/D2-D (2012/01)  
 DMS VECTOR NGD200

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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>				
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013	DATE COMPLETED	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				SHT  CONT.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA	-	C421	CD-323006	L04   L05	01

NG/D2-D (2012/01)

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01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		INDEX	PLANT NO.
00	13 05	FOR APPROVAL		DATE STARTED 31.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		CD-323006	SHT  CONT.
								L05 NIL	REV. NO.
									01



POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Gridsa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : SCHEMATICS DRAWINGS – +BBP2-4  
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

#### COVER SHEET

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4  
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323007	SHT   CONT.	01
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NG/D2-D (2012/01)

DMS

VECTOR

NGD200



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	<table><tr><th>SYMBOL</th><th>DESCRIPTION</th><th>SYMBOL</th><th>DESCRIPTION</th><th>SYMBOL</th><th>DESCRIPTION</th></tr><tr><td></td><td>FRAME CONNECTION</td><td></td><td>MAIN CONTACT OF A CIRCUIT BREAKER</td><td></td><td>RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING</td></tr><tr><td></td><td>EARTH CONNECTION</td><td></td><td>PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE</td><td></td><td>RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS</td></tr><tr><td></td><td>RESISTOR</td><td></td><td>BREAK CONTACT DELAYED WHEN OPERATING</td><td></td><td></td></tr><tr><td></td><td>VARIABLE RESISTOR</td><td></td><td>MAKE CONTACT DELAYED WHEN RELEASING</td><td></td><td>SIGNALLING LAMP</td></tr><tr><td></td><td>RESISTOR WITH PRESET ADJUSTMENT</td><td></td><td>TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION</td><td></td><td>MECHANICAL INDICATOR WITH AUTOMATIC RESET</td></tr><tr><td></td><td>CAPACITOR</td><td></td><td>JUNCTION OF MECHANICAL LINKS</td><td></td><td>MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET</td></tr><tr><td></td><td>SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE</td><td></td><td>AUTOMATIC RESET</td><td></td><td>ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET</td></tr><tr><td></td><td>OPEN CONTACT, MAKE CONTACT</td><td></td><td>NON-AUTOMATIC RESET</td><td></td><td>ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET</td></tr><tr><td></td><td>CLOSED CONTACT, BREAK CONTACT</td><td></td><td>SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET</td><td></td><td>RELAY WITH MAKE CONTACT</td></tr><tr><td></td><td>CHANGE-OVER CONTACT, BREAK BEFORE MAKE</td><td></td><td>SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET</td><td></td><td>RELAY WITH CHANGE-OVER CONTACT</td></tr><tr><td></td><td>MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING</td><td></td><td>CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING</td></tr><tr><td></td><td>BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING</td></tr><tr><td></td><td>SWITCHING DEVICE WITH MANUAL CONTROL</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>MAKE CONTACT DELAYED WHEN OPERATING</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>BREAK CONTACT DELAYED WHEN RELEASING</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>MAIN CONTACT OF A SWITCH DISCONNECTOR</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>MAIN CONTACT OF A DISCONNECTOR</td><td></td><td></td><td></td><td></td></tr></table>										SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION		FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING		EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS		RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING				VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		SIGNALLING LAMP		RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INDICATOR WITH AUTOMATIC RESET		CAPACITOR		JUNCTION OF MECHANICAL LINKS		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET		SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET		OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET		CLOSED CONTACT, BREAK CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH MAKE CONTACT		CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		RELAY WITH CHANGE-OVER CONTACT		MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING		BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING		SWITCHING DEVICE WITH MANUAL CONTROL						MAKE CONTACT DELAYED WHEN OPERATING						BREAK CONTACT DELAYED WHEN RELEASING						MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING						MAIN CONTACT OF A SWITCH DISCONNECTOR						MAIN CONTACT OF A DISCONNECTOR				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION																																																																																																																							
	FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING																																																																																																																							
	EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS																																																																																																																							
	RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING																																																																																																																									
	VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		SIGNALLING LAMP																																																																																																																							
	RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INDICATOR WITH AUTOMATIC RESET																																																																																																																							
	CAPACITOR		JUNCTION OF MECHANICAL LINKS		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET																																																																																																																							
	SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET																																																																																																																							
	OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET																																																																																																																							
	CLOSED CONTACT, BREAK CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH MAKE CONTACT																																																																																																																							
	CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		RELAY WITH CHANGE-OVER CONTACT																																																																																																																							
	MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING																																																																																																																							
	BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING																																																																																																																							
	SWITCHING DEVICE WITH MANUAL CONTROL																																																																																																																											
	MAKE CONTACT DELAYED WHEN OPERATING																																																																																																																											
	BREAK CONTACT DELAYED WHEN RELEASING																																																																																																																											
	MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING																																																																																																																											
	MAIN CONTACT OF A SWITCH DISCONNECTOR																																																																																																																											
	MAIN CONTACT OF A DISCONNECTOR																																																																																																																											
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="2">GRAPHICAL SYMBOLS FOR DIAGRAMS</td><td colspan="2">الشركة الوطنية لنقل الكهرباء</td></tr><tr><td>01</td><td>13 49</td><td>FACTORY ASBUILT</td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="2">32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4</td><td colspan="2">National Grid SA</td></tr><tr><td>00</td><td>13 05</td><td>FOR APPROVAL</td><td colspan="2">DATE STARTED 31.01.2013</td><td colspan="2">DATE COMPLETED _____</td><td colspan="2">S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</td><td colspan="2">INDEX PLANT NO. DRAWING NUMBER</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="2">RIYADH SAUDI ARABIA</td><td colspan="2">SHEET NO. SHT CONT.</td></tr><tr><td></td><td></td><td></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2">011 012</td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS		الشركة الوطنية لنقل الكهرباء		01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		National Grid SA		00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER		REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		SHEET NO. SHT CONT.											011 012																																																												
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS		الشركة الوطنية لنقل الكهرباء																																																																																																																			
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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FUSE / LINK		WATTMETER		ELEMENT WITH NEGATED INHIBITING INPUT
	FUSE WITH THE SUPPLY SIDE INDICATED		VARMETER		ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POWER FACTOR METER		ELEMENT WITH POSTPONED OUTPUT
	SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POSITION INDICATOR		AND-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE		SYNCHROSCOPE		OR-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING VOLTMETER		LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING WATTMETER		ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		HOUR METER		EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER		LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM		MAJORITY ELEMENT WITH THREE INPUTS
	FILTER		ELEMENT WITH STATIC INPUT		NEGATOR
	HIGH-PASS FILTER		ELEMENT WITH STATIC NEGATED INPUT		NAND ELEMENT WITH TWO INPUTS
	BAND-PASS FILTER		ELEMENT WITH STATIC NEGATED OUTPUT		NOR ELEMENT WITH TWO INPUTS
	VOLTMETER		ELEMENT WITH DYNAMIC INPUT		BISTABLE ELEMENT
	AMMETER		ELEMENT WITH DYNAMIC NEGATED INPUT		
			ELEMENT WITH INHIBITING INPUT		

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	GRAPHICAL SYMBOLS FOR DIAGRAMS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013	DATE COMPLETED	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		-	C421	CD-323007	SHT   CONT.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					012   013	01



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## LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION
±R2	DC SUPPLY – SECONDARY PROTECTION
±R3	DC SUPPLY – BACK UP PROTECTION
±IT	DC SUPPLY – INTER TRIP
FL	DC SUPPLY – FLASHING CIRCUIT
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET
BB CBF±/CBF±	DC SUPPLY – CBF PROTECTION
R	RESET BUS – ALARM SYSTEM
CR	CONTROL ROOM
ECC	ENERGY CONTROL CENTRE
LOCAL	THE LOCATION OF CONTROLLED DEVICE
REMOTE	ANY OTHER LOCATION NOT LOCAL
ON	CB NORMALLY OPEN AUXILIARY CONTACT
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT
A	COMMON
T	TEST POSITION
S	SERVICE POSITION
CS	CLOSE IN SERVICE POSITION
CT	CLOSE IN TEST POSITION
LS	LOCAL SERVICE
LT	LOCAL TEST
LC	LOCAL CLOSE
LO	LOCAL OPEN
RO	REMOTE OPEN
OP	OPERATE
RE	RESET

## NOTES

### LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

### WIRING

PVC INSULATED 600V GRADE  
 2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS  
 2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS  
 1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS  
 2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS  
 2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS  
 FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:  
 + SIGN FOR DC + WIRE  
 – SIGN FOR DC – WIRE

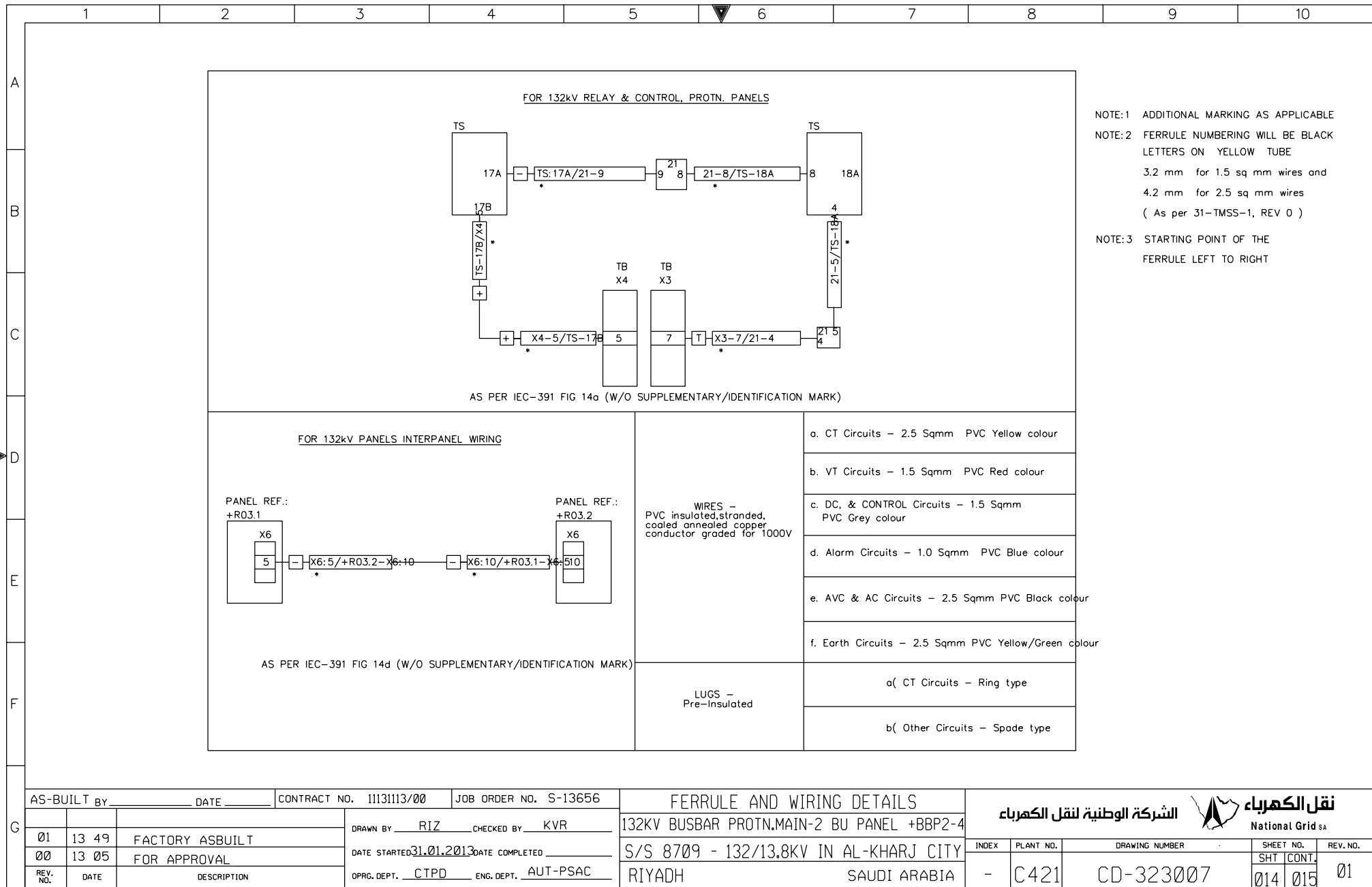
### LUGS

A. CT CIRCUITS– RING TYPE  
 B. OTHER CIRCUITS – SPADE TYPE

### FERULLING

YELLOW TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES  
 ( AS PER 31 – TMSS–1, RE.0 )


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON LEGEND				الشركة الوطنية لنقل الكهرباء National Grid sa			
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				-	C421	CD-323007	SHT   CONT.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							013   014



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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	DRAWING REFERENCES		الشركة الوطنية لنقل الكهرباء National Grid sa						
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 05	FOR APPROVAL		DATE STARTED 31.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY					SHT   CONT.	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-323007	015   016	01

MANUFACTURER		SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION			SS 8709 132kv RELAY PANELS	
		CD-322928	132/13.8kv GT-1 RELAY PANEL -1	+R05.1
			132/13.8kv GT-1 RELAY PANEL -2	+R05.2
		CD-322931	132/13.8kv GT-2 RELAY PANEL -1	+R01.1
			132/13.8kv GT-2 RELAY PANEL -2	+R01.2
		CD-322934	132/13.8kv GT-3 RELAY PANEL -1	+R04.1
			132/13.8kv GT-3 RELAY PANEL -2	+R04.2
		CD-322936	132/13.8kv TRANSFORMER-1,2& 3 AVC PANEL	+AVC
		CD-322922	132KV SPARE-1 UGF RELAY PANEL -1	+R07.1
			132KV SPARE-1 UGF RELAY PANEL -2	+R07.2
		CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1
			132KV 8020 UGF RELAY PANEL -2	+R02.2
		CD-322919	132KV 8710 UGF RELAY PANEL -1	+R03.1
			132KV 8710 UGF RELAY PANEL -2	+R03.2
		CD-322925	132KV SPARE-2 UGF RELAY PANEL -1	+R06.1
			132KV SPARE-2 UGF RELAY PANEL -2	+R06.2
		CD-323012	132KV FOIP PANEL	+FOIP
		CD-322946	132kv BUS COUPLER-A	+R130
		CD-322948	132kv BUS COUPLER-B	+R230
		CD-322950	132kv BUS SECTION	+R120
CD-322991	132kv BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BBP1-1		
CD-322993	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BBP1-2		
CD-322995	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BBP1-3		
CD-322997	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BBP1-4		
CD-322999	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BBP1-5		
CD-323001	132kv BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BBP2-1		
CD-323003	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BBP2-2		
CD-323005	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BBP2-3		
CD-323007	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BBP2-4		
CD-323009	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BBP2-5		

NG/D2-D (2012/01)	
DMS	VECTOR
NGD200	

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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES			الشركة الوطنية لنقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4			INDEX	PLANT NO.
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			CD-323007	SHT  CONT.
										016   051	REV. NO.
											01



PROTECTION & SUBSTATION  
AUTOMATION

SCHEMATICS DWG.NO

PANEL DESCRIPTION

PANEL  
REFERENCE

SS 8709 13.8KV RELAY PANELS

CD-322952 13.8KV Capacitor Bank-1 Protection Panel

+CBP-1

CD-322954 13.8KV Capacitor Bank-2 Protection Panel

+CBP-2

CD-322956 13.8KV Capacitor Bank-2 Protection Panel

+CBP-3

CD-322958 13.8 KV ACCS PANEL

+ACCS

CD-322962 13.8KV ACSE PANEL

+ACSE

CD-322968 13.8KV Under Voltage Load Shedding Panel

+UVLS

CD-322964 13.8KV Under Frequency Load Shedding Panel-1

+UFLS01

CD-322966 13.8KV Under Frequency Load Shedding Panel-2

+UFLS02

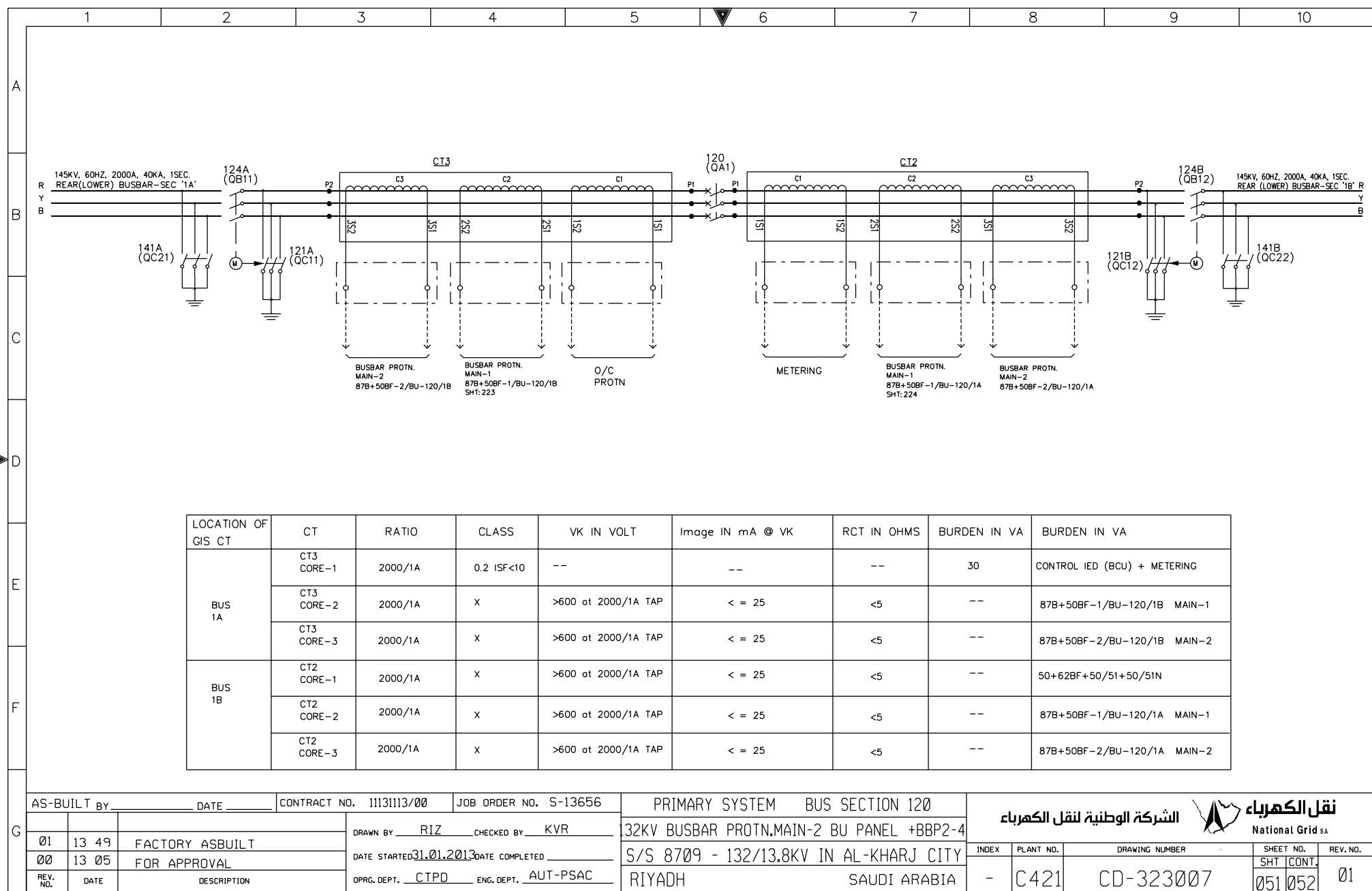
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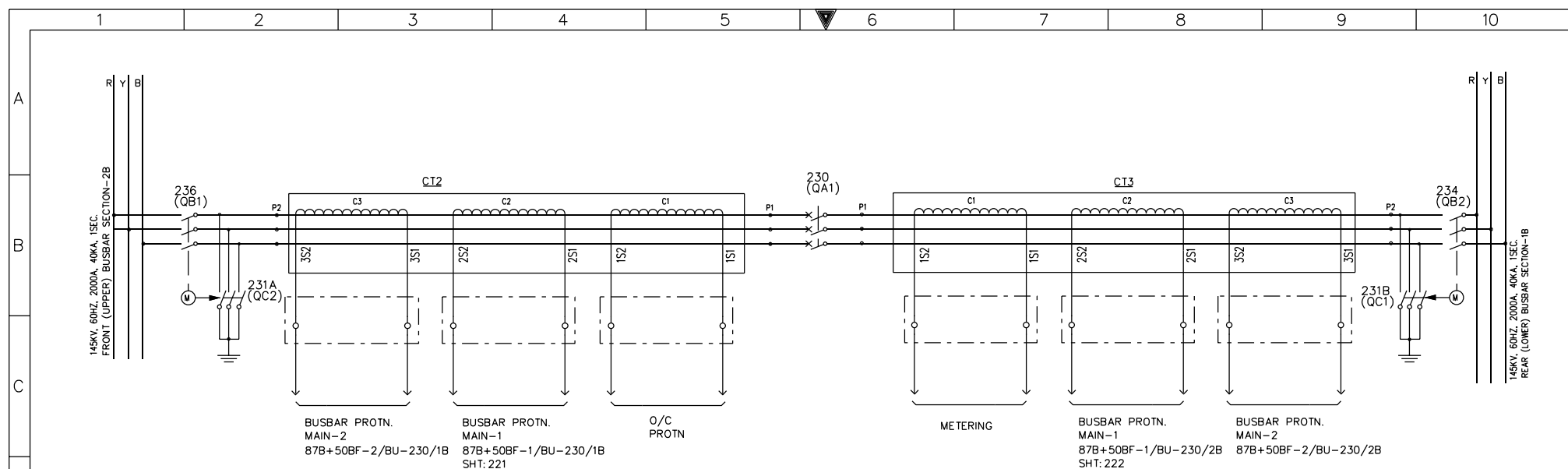
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VECTOR

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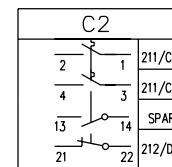
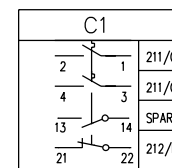
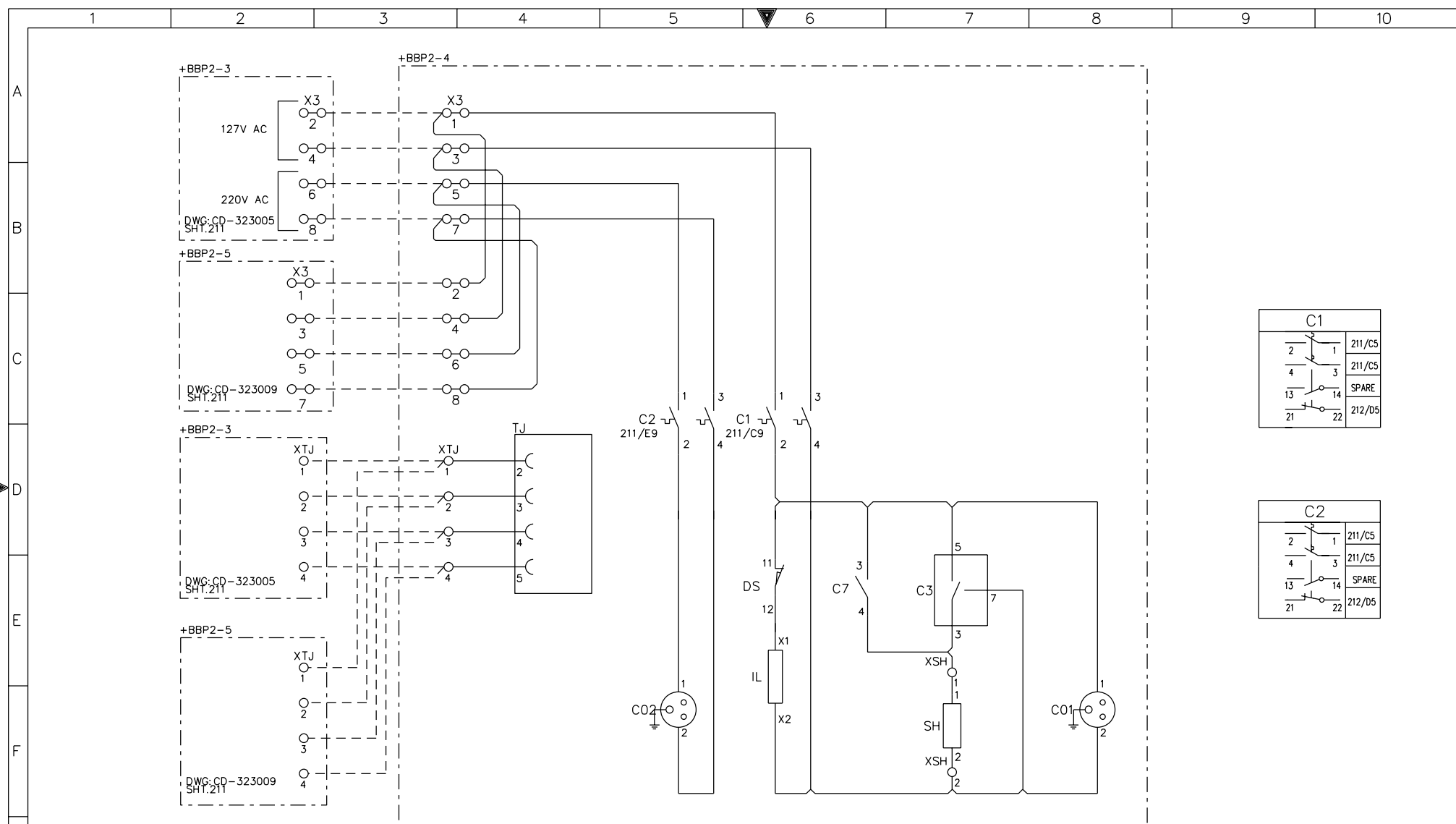
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LOCATON OF GIS CT	CT	RATIO	CLASS	VK IN VOLT	Image IN mA @ VK	RCT IN OHMS	BURDEN IN VA	BURDEN IN VA
BUS 1B	CT3 CORE-1	2000/1A	0.2 ISF<10	--	--	--	30	CONTROL IED (BCU) + METERING
	CT3 CORE-2	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-1/BU-230/2B MAIN-1
	CT3 CORE-3	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-2/BU-230/2B MAIN-2
BUS 2B	CT2 CORE-1	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	50+62BF+50/51+50/51N
	CT2 CORE-2	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-1/BU-230/1B MAIN-1
	CT2 CORE-3	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-2/BU-230/1B MAIN-2

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		PRIMARY SYSTEM BUS COUPLER 230		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROT.N.MAIN-2 BU PANEL +BBP2-4		National Grid SA			
00	13 05	FOR APPROVAL		DATE STARTED 31.01.2013 DATE COMPLETED		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-323007	SHT   CONT.
											052   211
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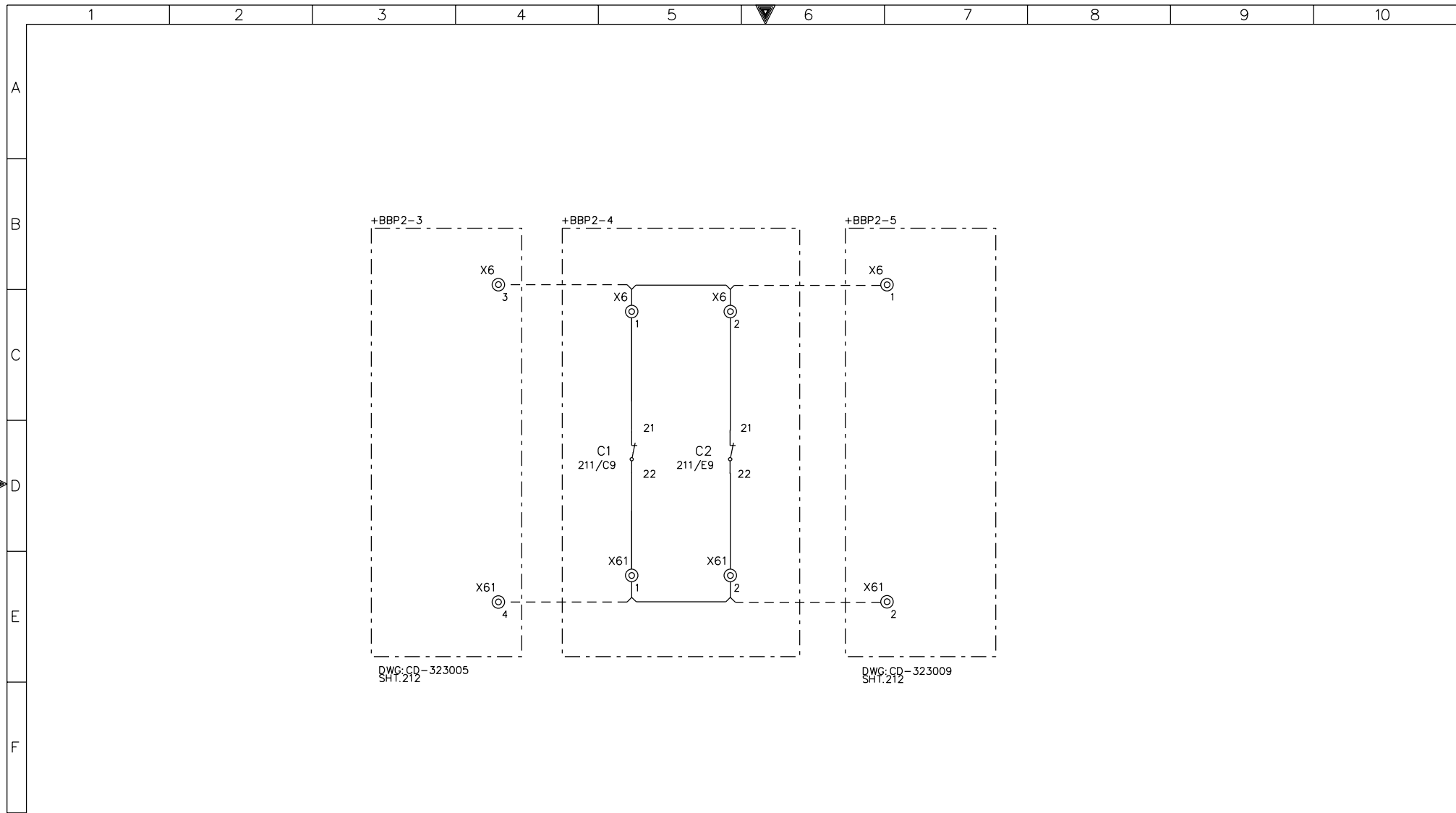


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC SUPPLY FOR ILLUMINATION & POWER SOCKET		
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		

الشركة الوطنية لنقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323007	211   212	01

NG/D2-D (2012/01)  
DMS VECTOR NGD200

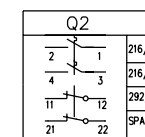
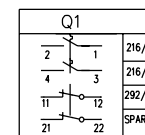
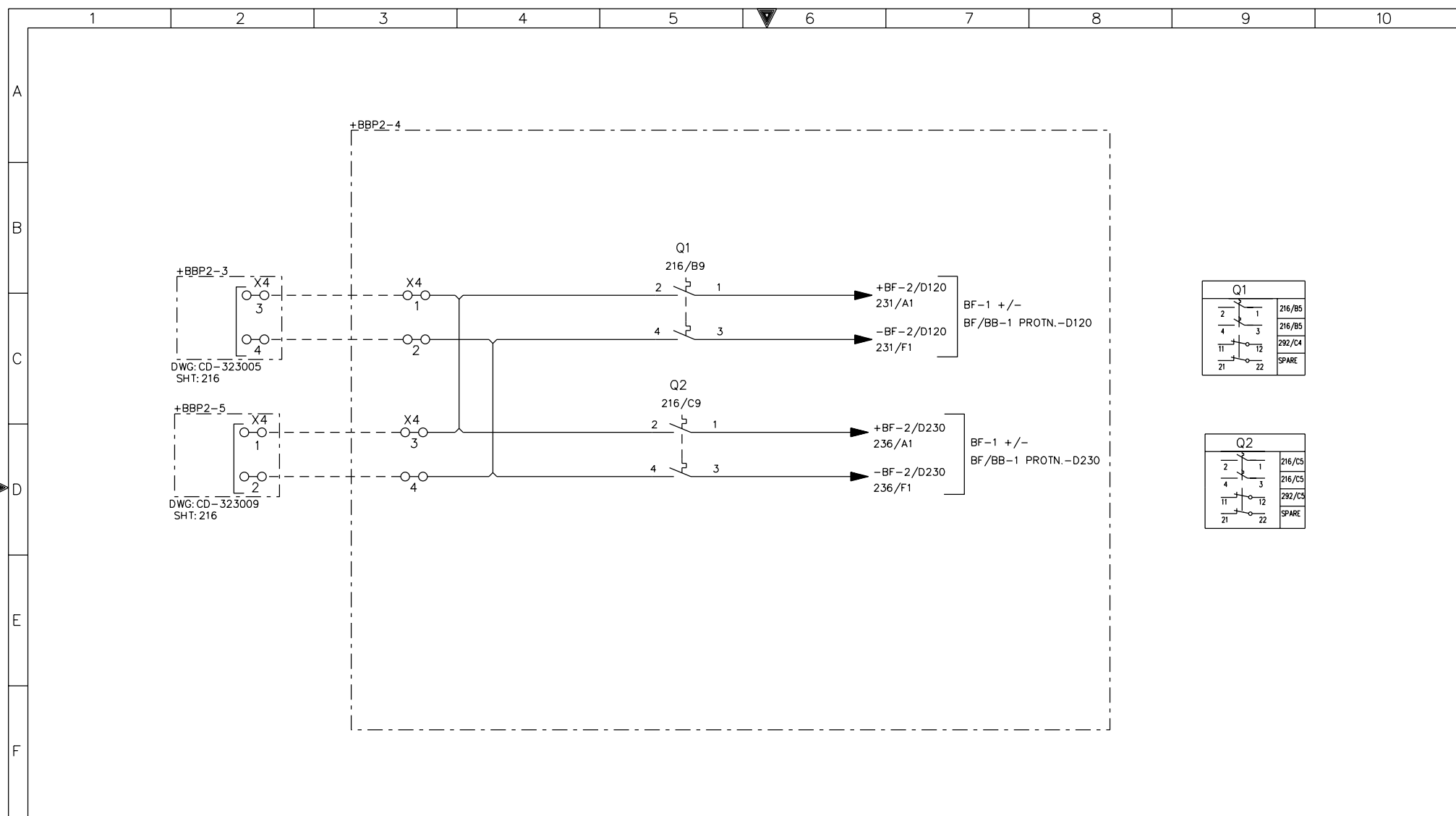


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CUB.LIGHTING,HEATER&SOKET ALARM CKT.			
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4			
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			


INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323007	212	01

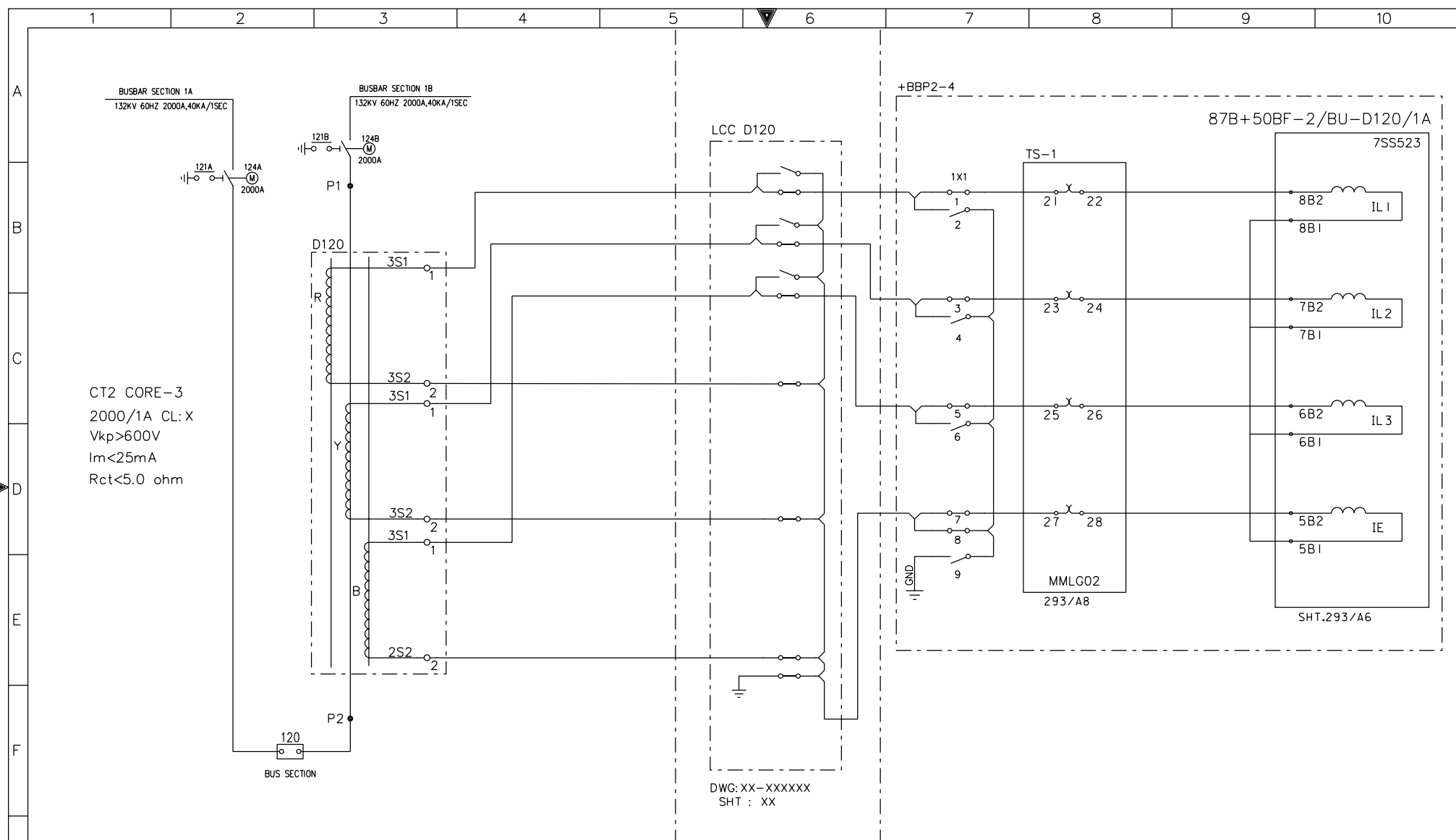
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC SUPPLY DISTRIBUTION			<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid SA</div>					
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4			INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.
00	13 05		DATE STARTED 31.01.2013		DATE COMPLETED		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			-	C421	CD-323007		SHT   CONT.	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA								



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_

CONTRACT NO. 1113113/00

JOB ORDER NO. S-13656

CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D120/1A

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13 49

FACTORY ASBUILT

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13 05

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 31.01.2013

DATE COMPLETED \_\_\_\_\_

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

-

C421


CD-323007

221

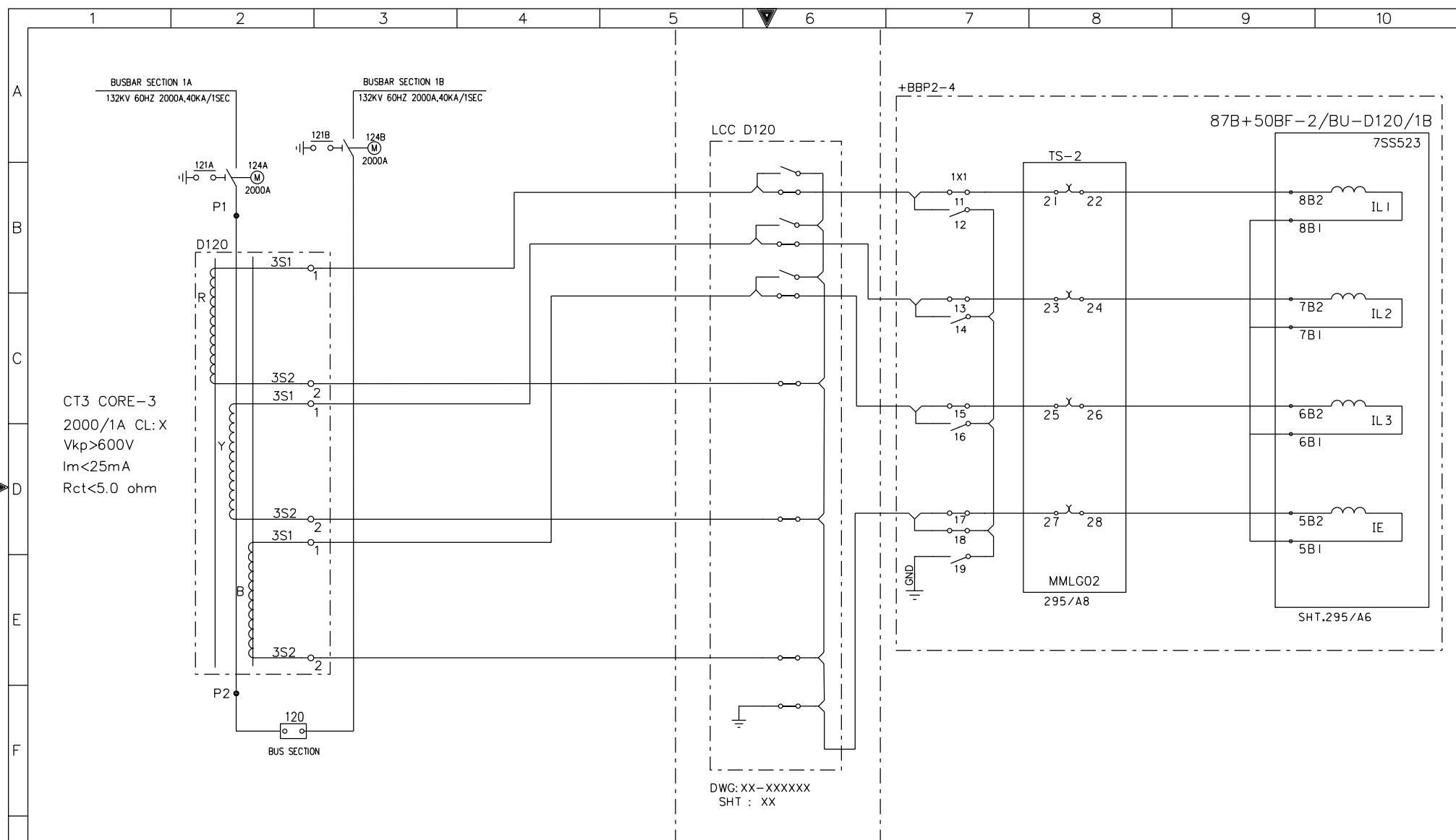
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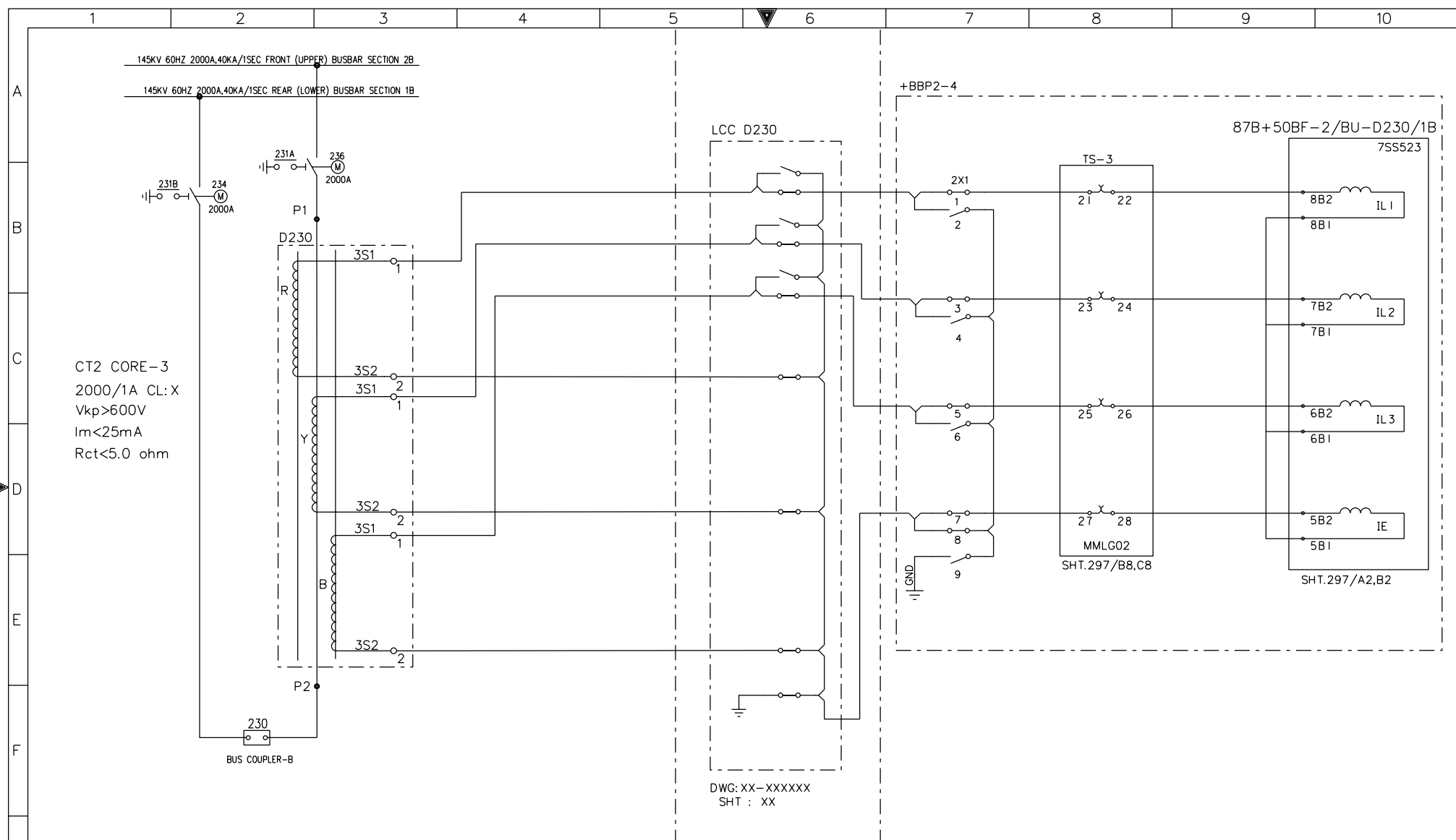
الشركة الوطنية لنقل الكهرباء




National Grid SA

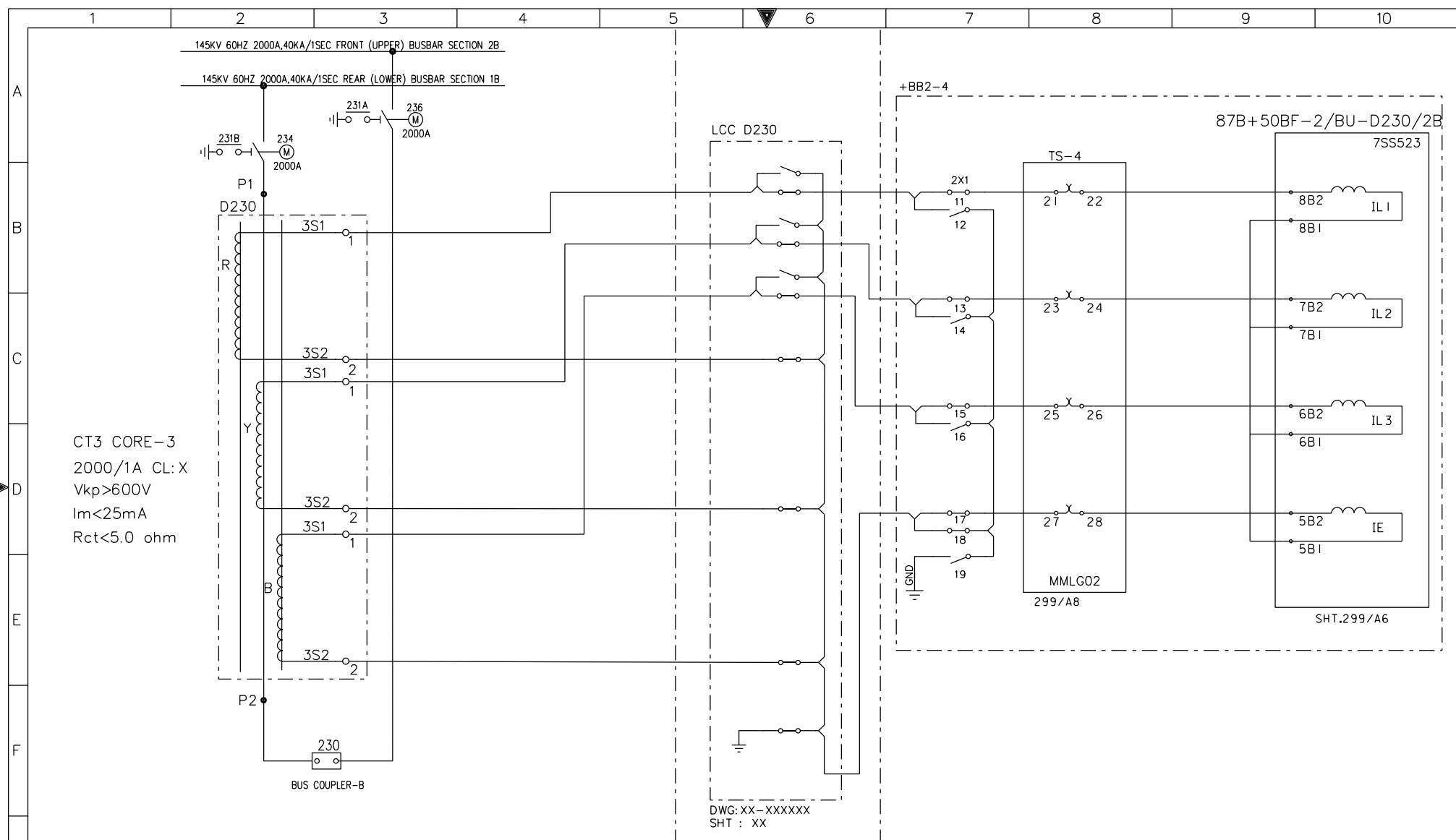


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01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4		
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013 DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	INDEX	PLANT NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA	-	C421
					DRAWING NUMBER	CD-323007
					SHEET NO.	222
					CONT.	223
					REV. NO.	01



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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D230/1B	<div><div>الشركة الوطنية لنقل الكهرباء</div><div><div>نقل الكهرباء National Grid SA</div></div></div>				
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 05		DATE STARTED 31.01.2013	DATE COMPLETED	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	-	C421	CD-323007	SHT  CONT  223 224	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 05

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 31.01.2013

DATE COMPLETED \_\_\_\_\_

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC

CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D230/2B

132KV BUSBAR PROTN,MAIN-2 BU PANEL +BBP2-4

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

National Grid SA

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

SHT |CONT.

REV. NO.

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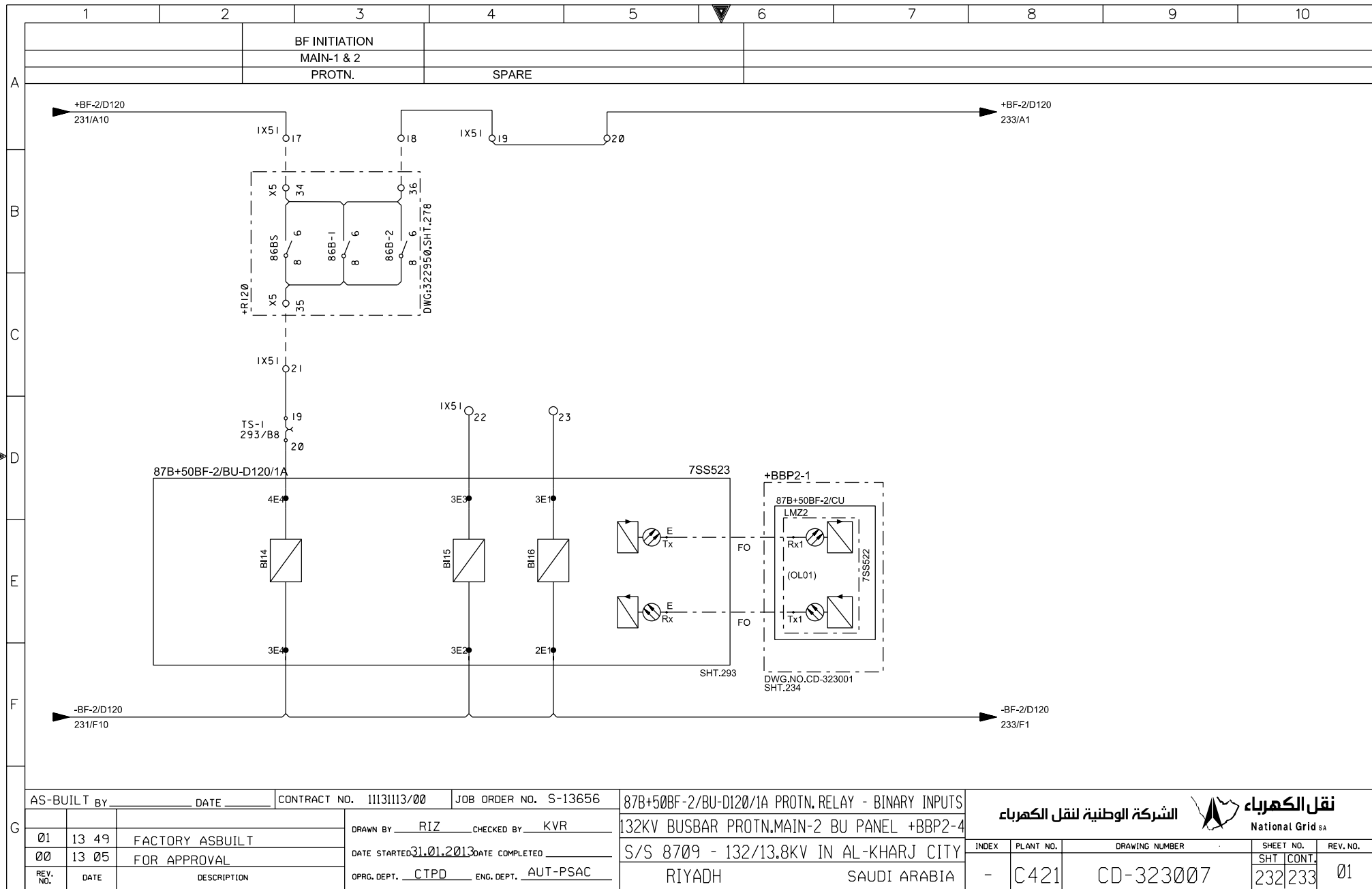
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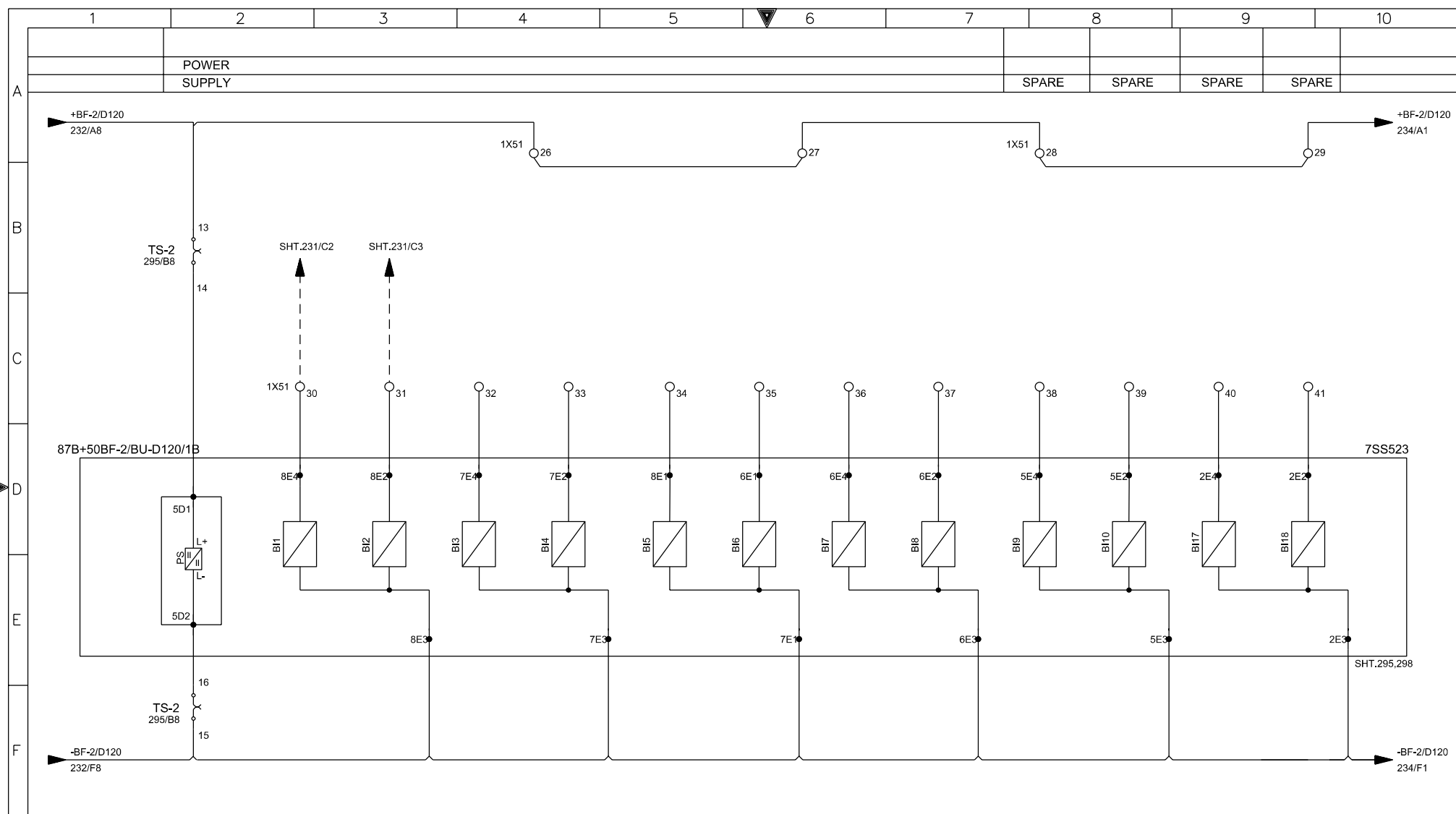
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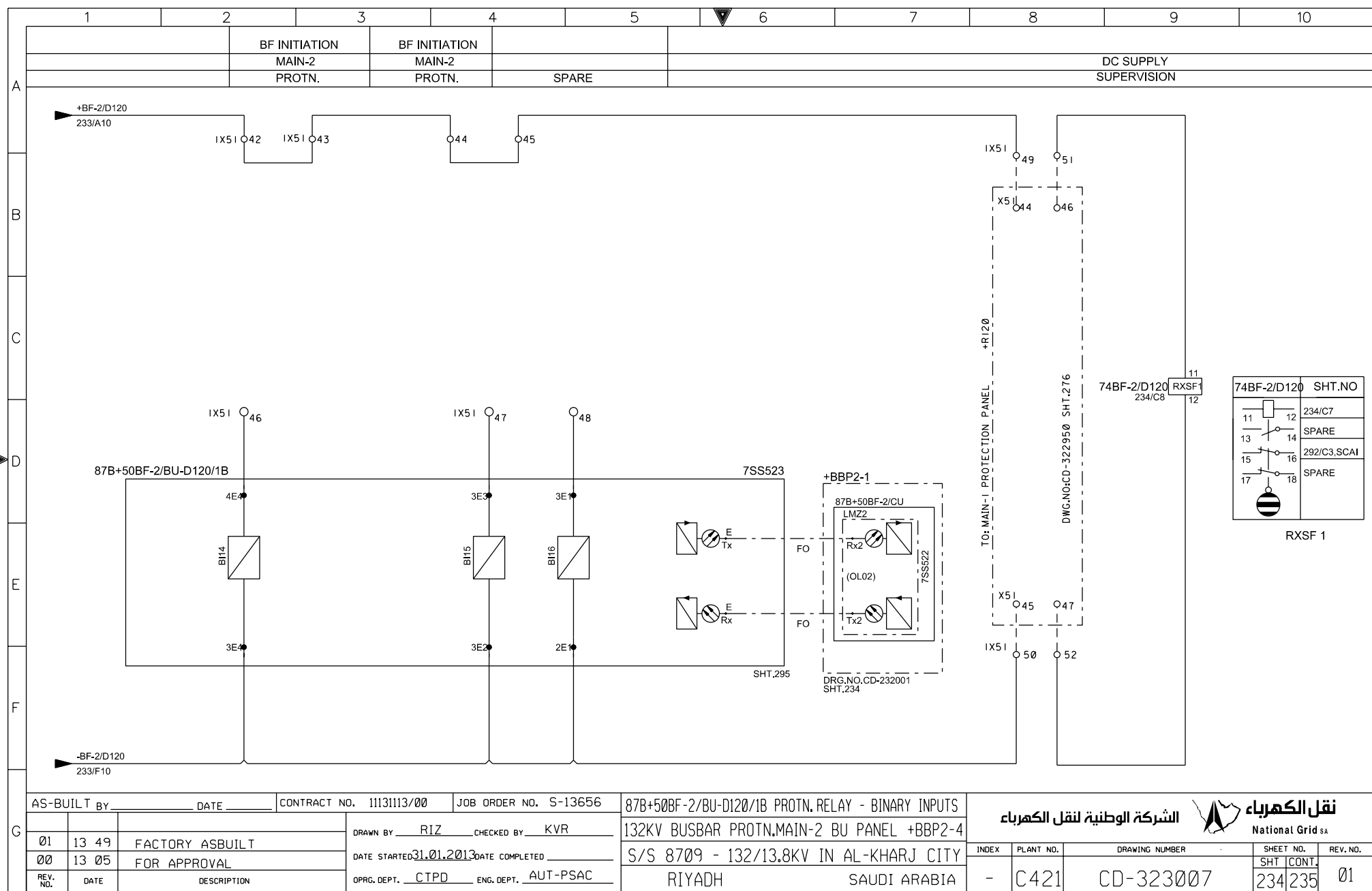


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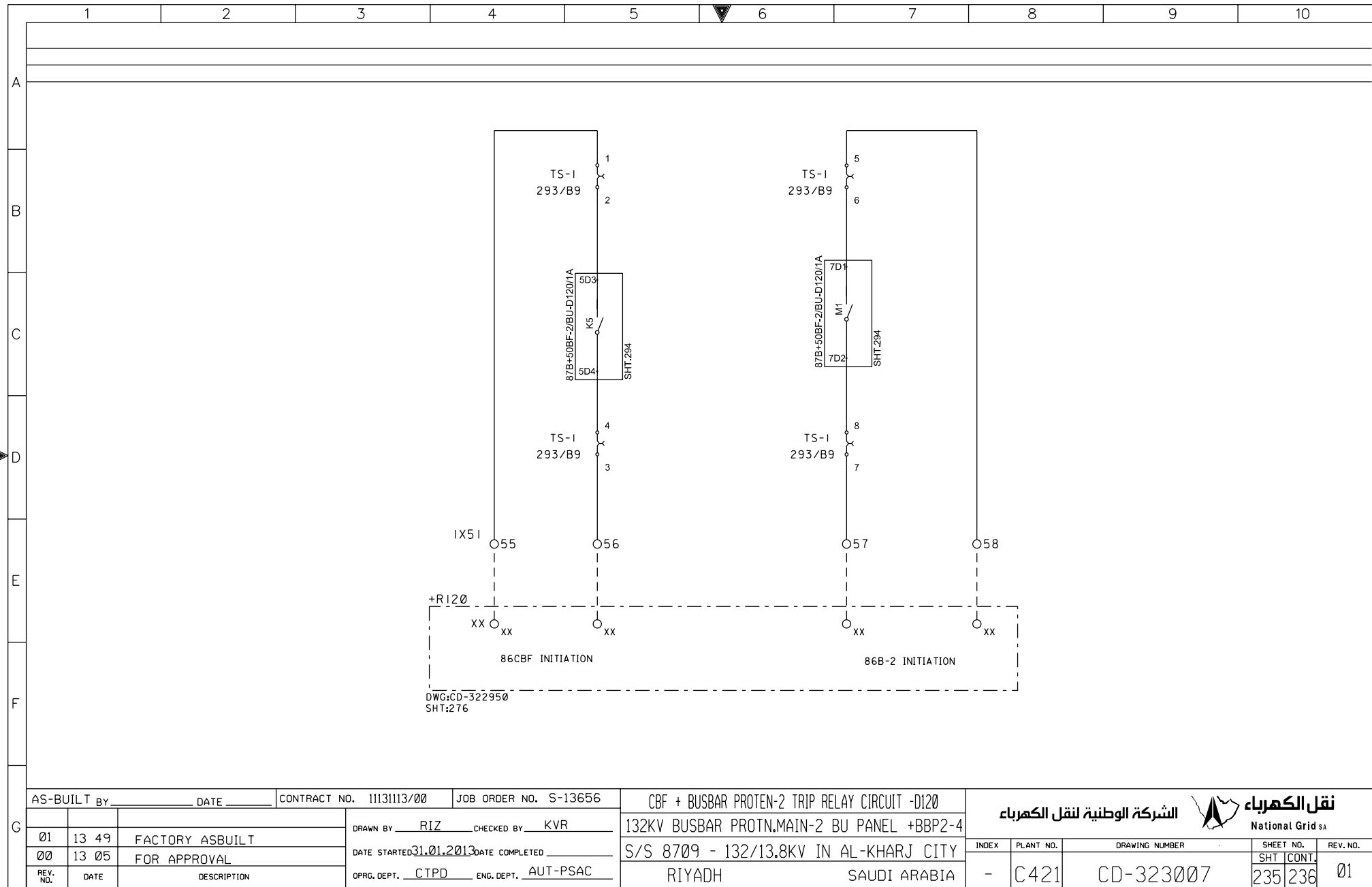
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					DRAWN BY RIZ CHECKED BY KVR		32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4							
01 13 49 FACTORY ASBUILT					DATE STARTED 31.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY							
00 13 05 FOR APPROVAL					OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO. SHT   CONT.		REV. NO.
REV. NO. DATE DESCRIPTION									-	C421	CD-323007	233   234		01

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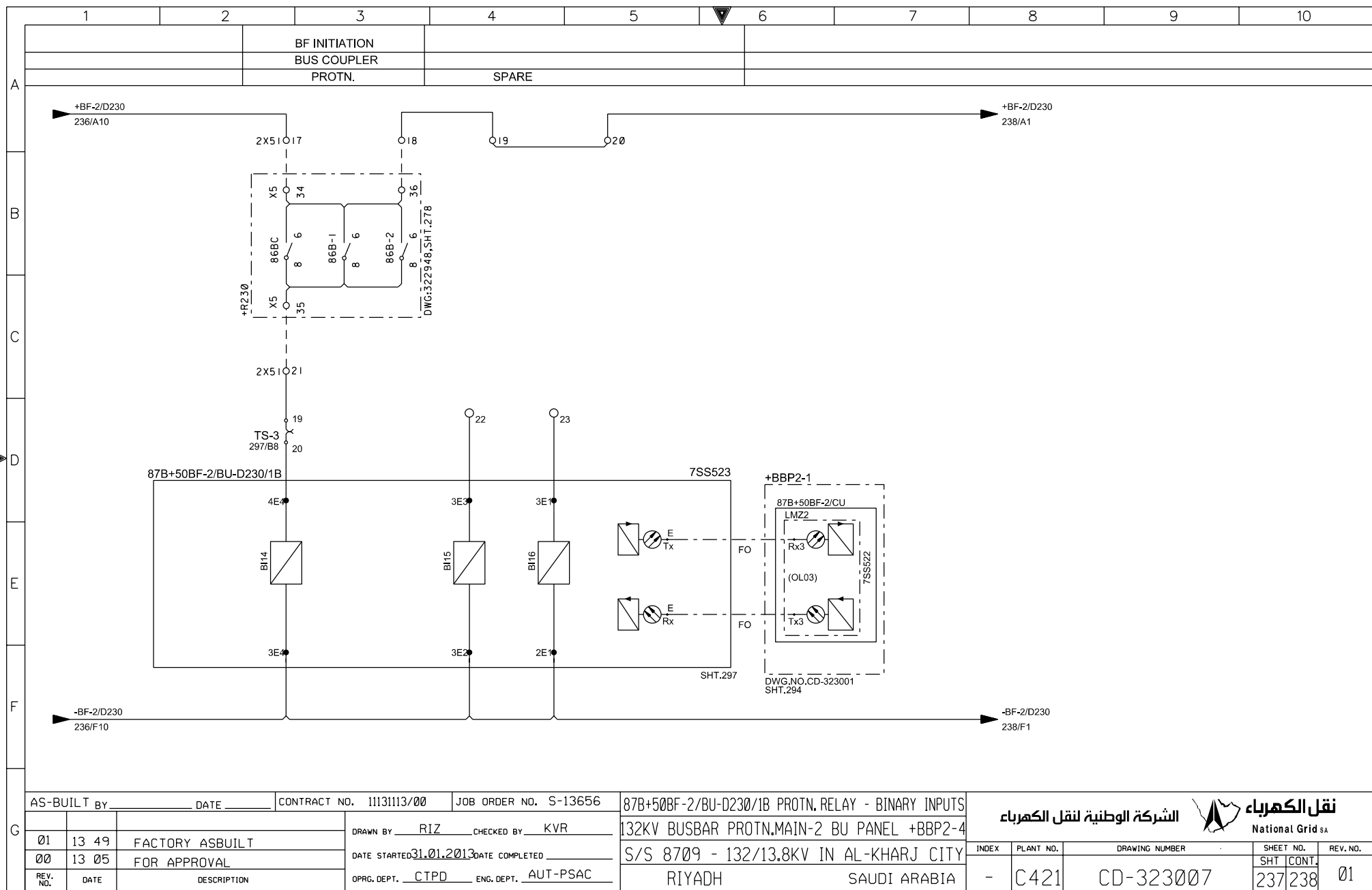


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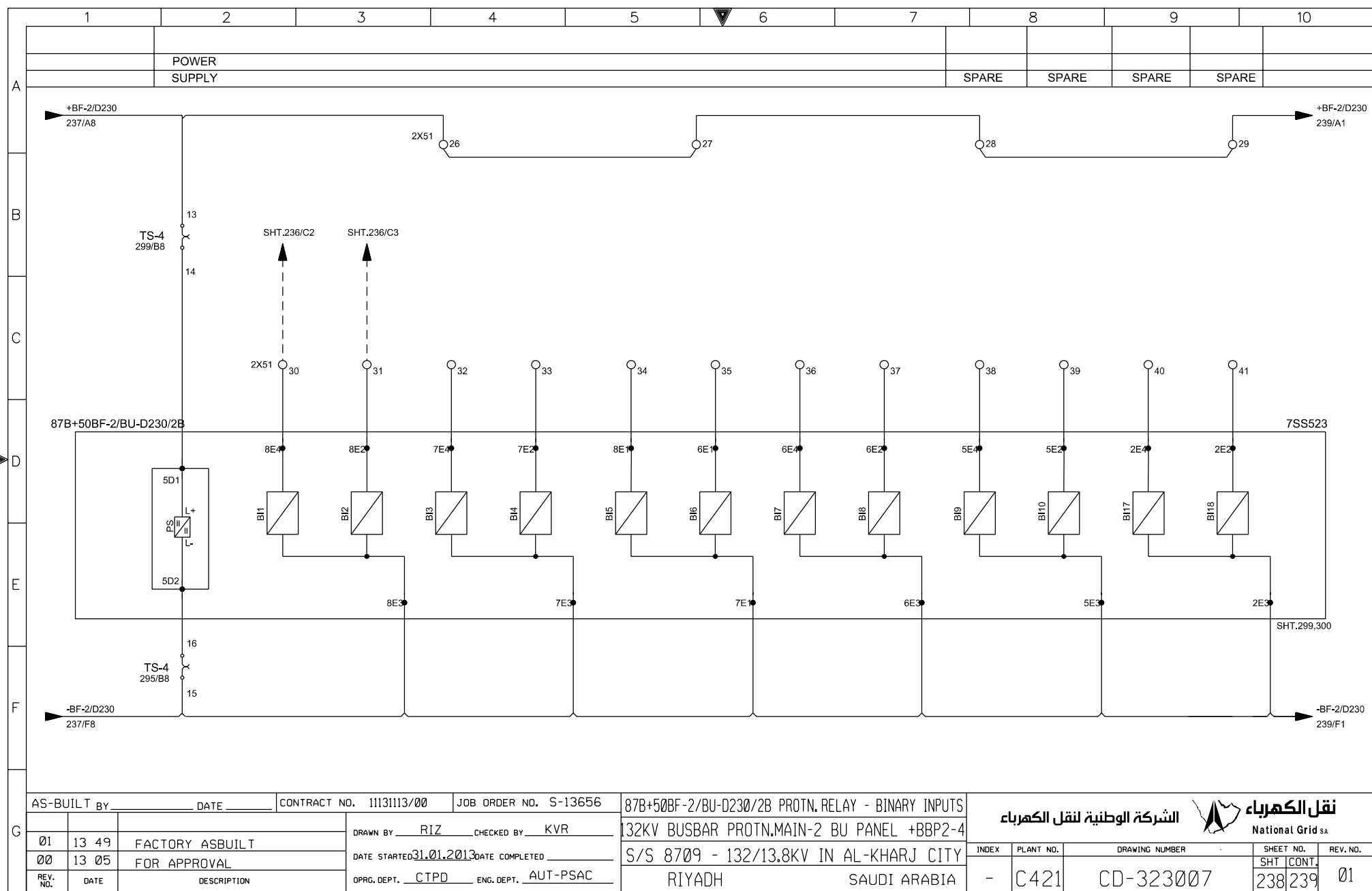


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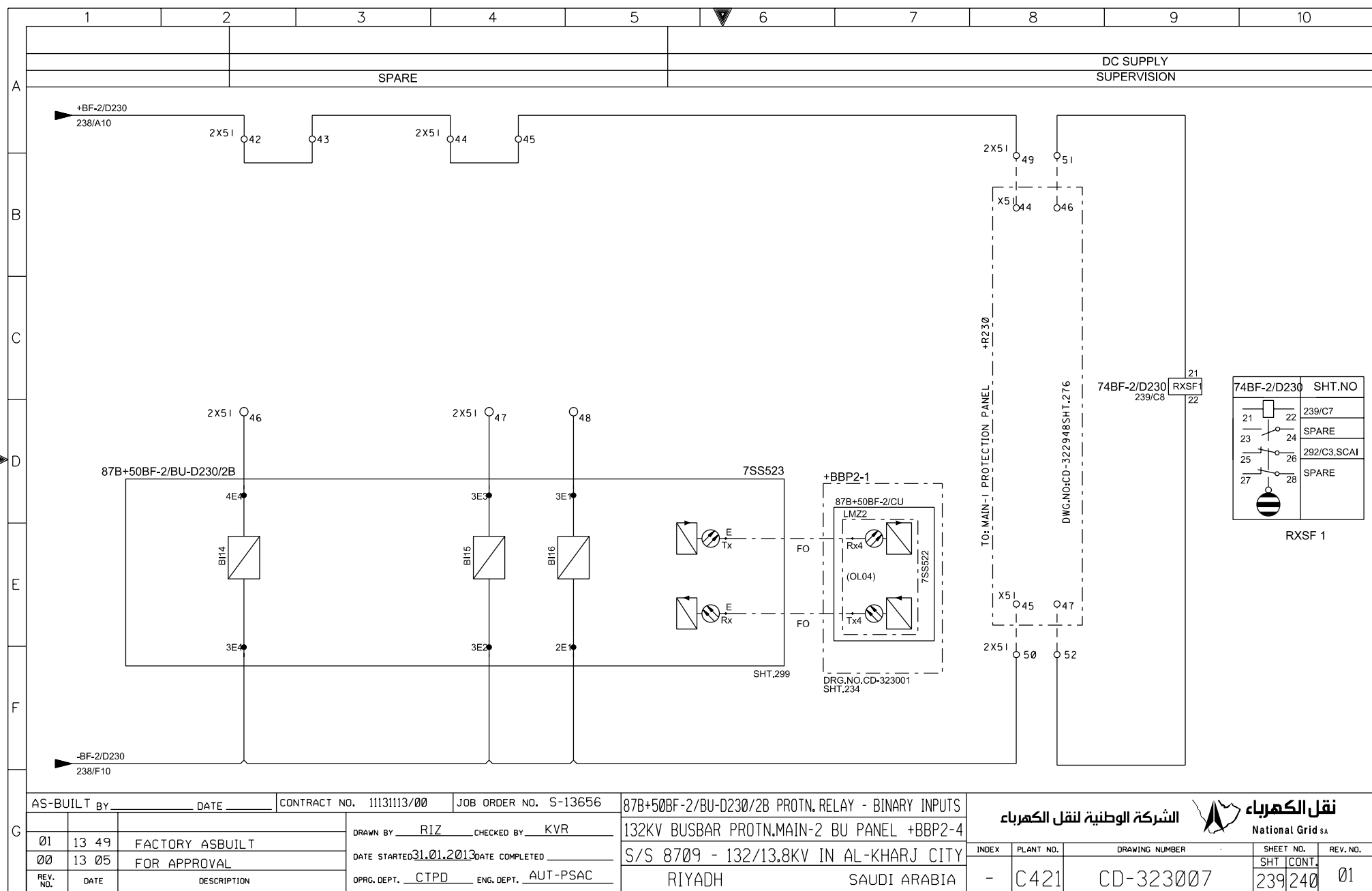




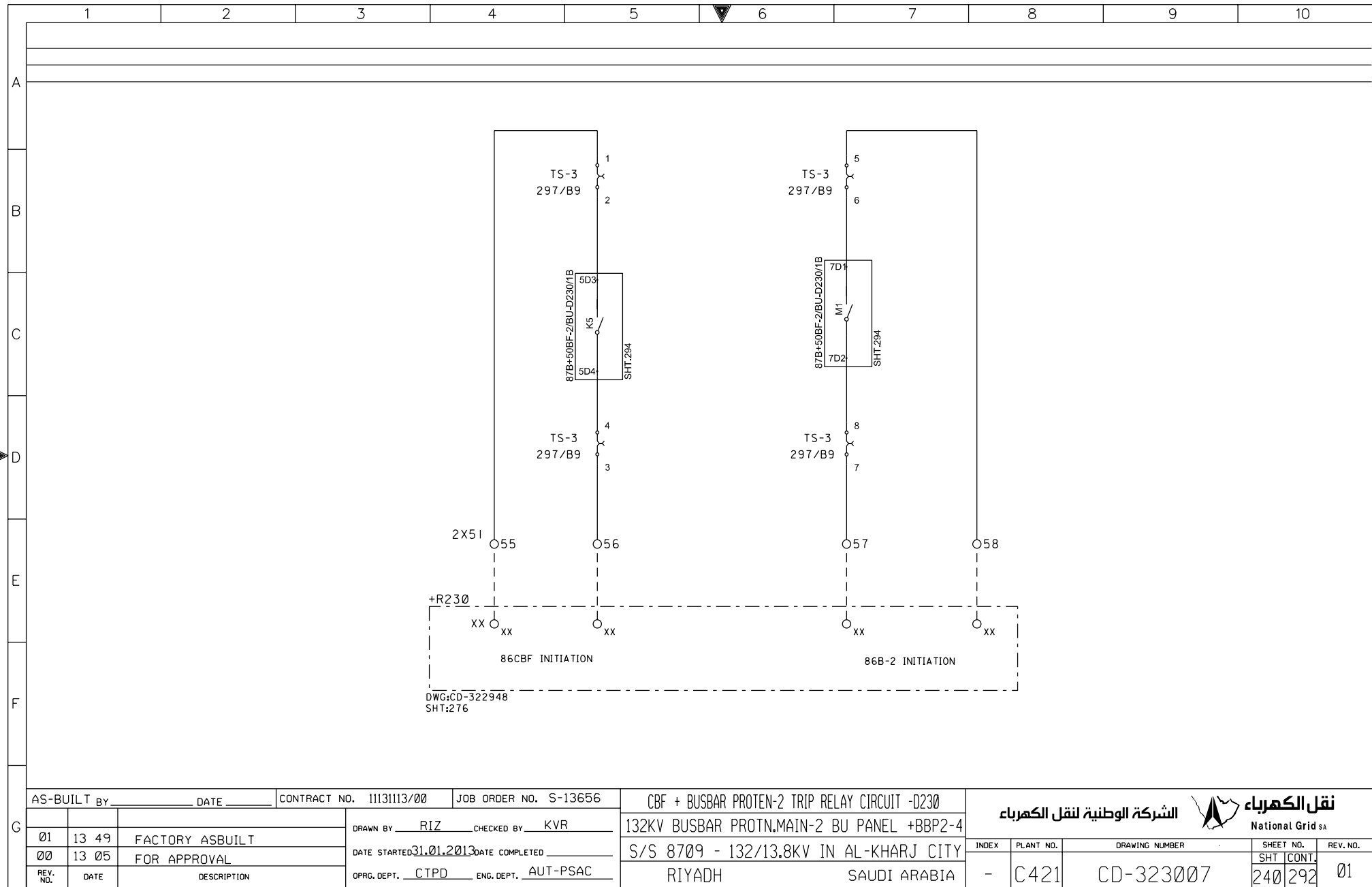
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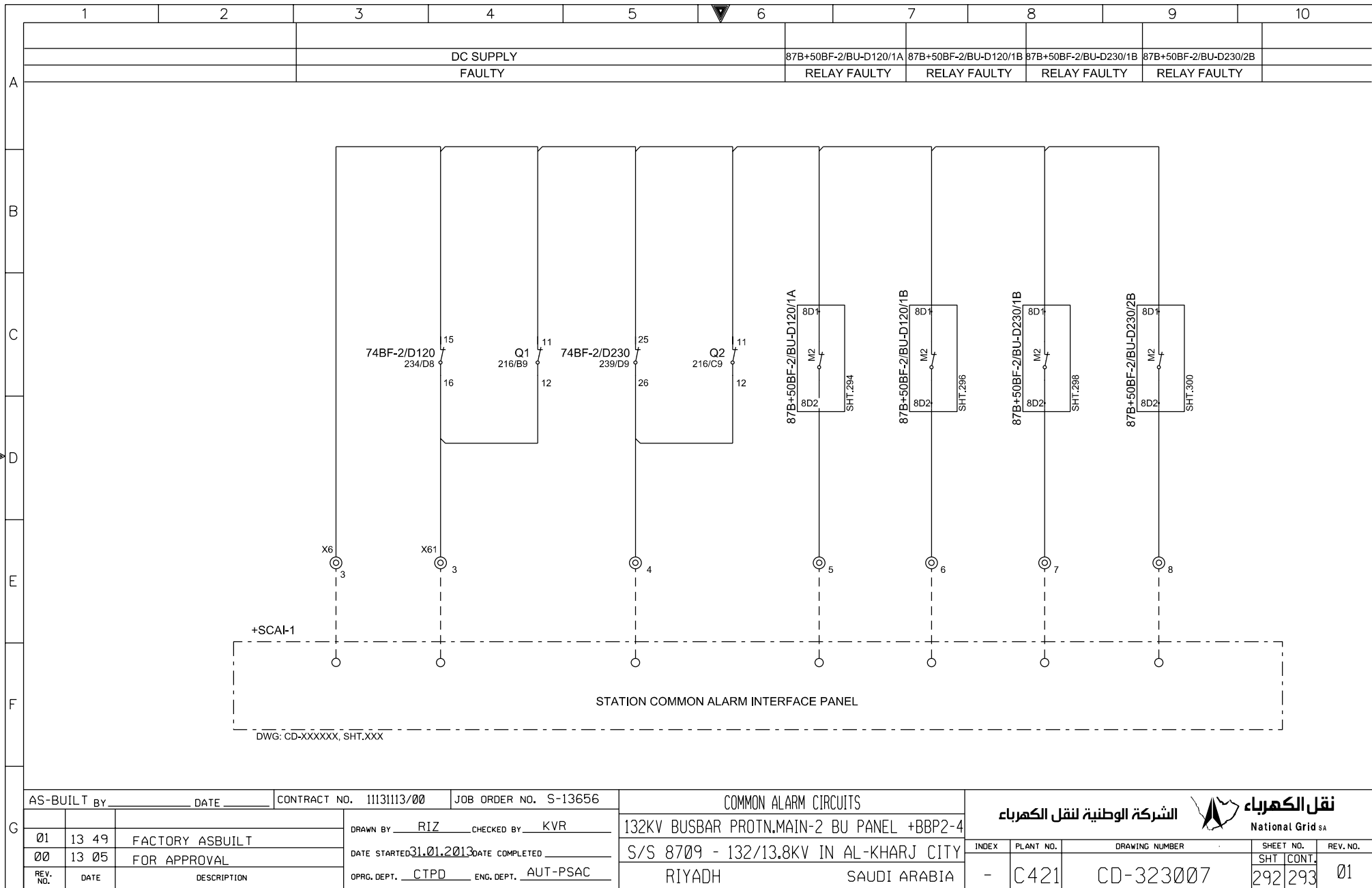
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AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

### COMMON ALARM CIRCUITS

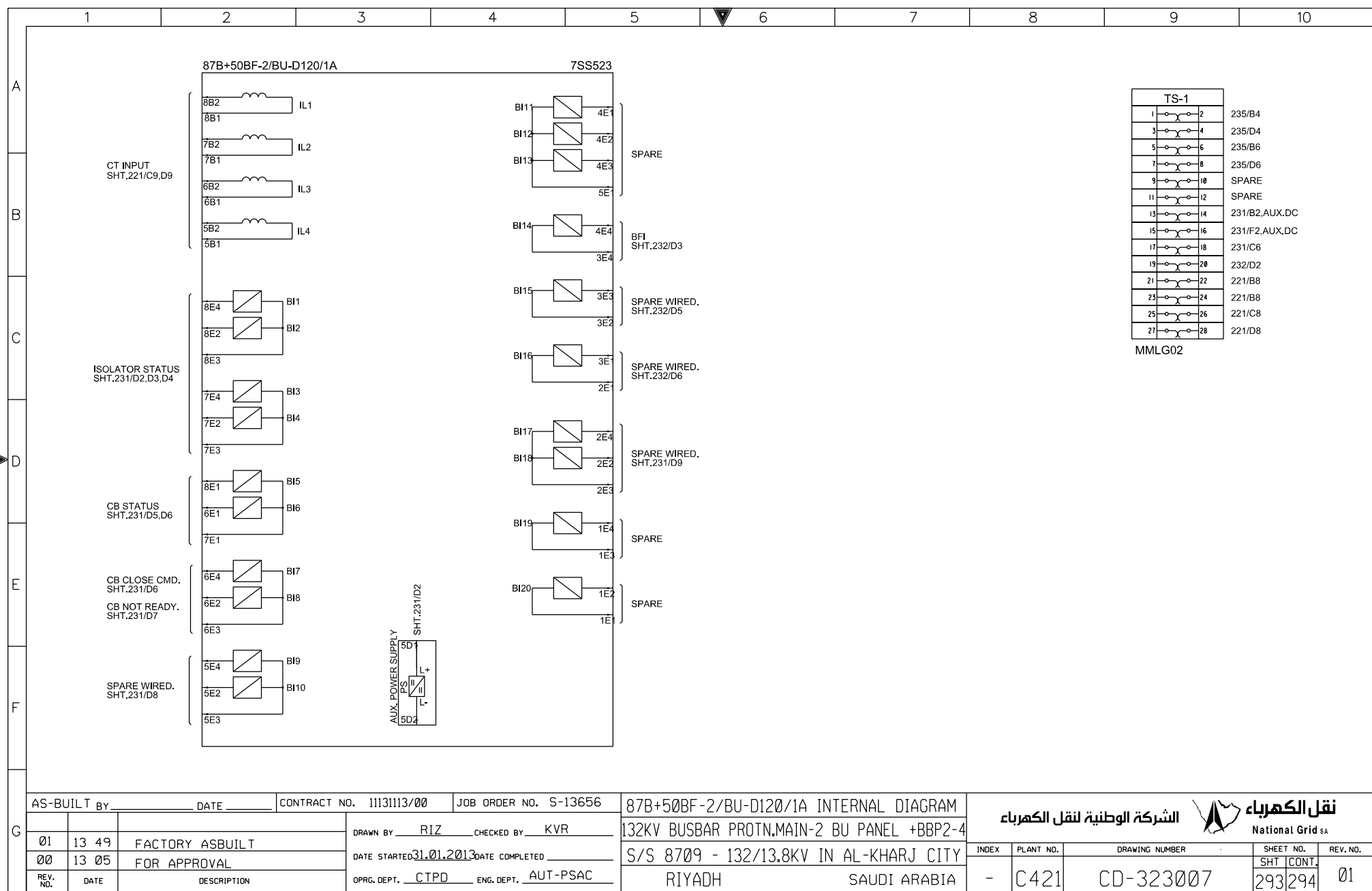
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4  
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

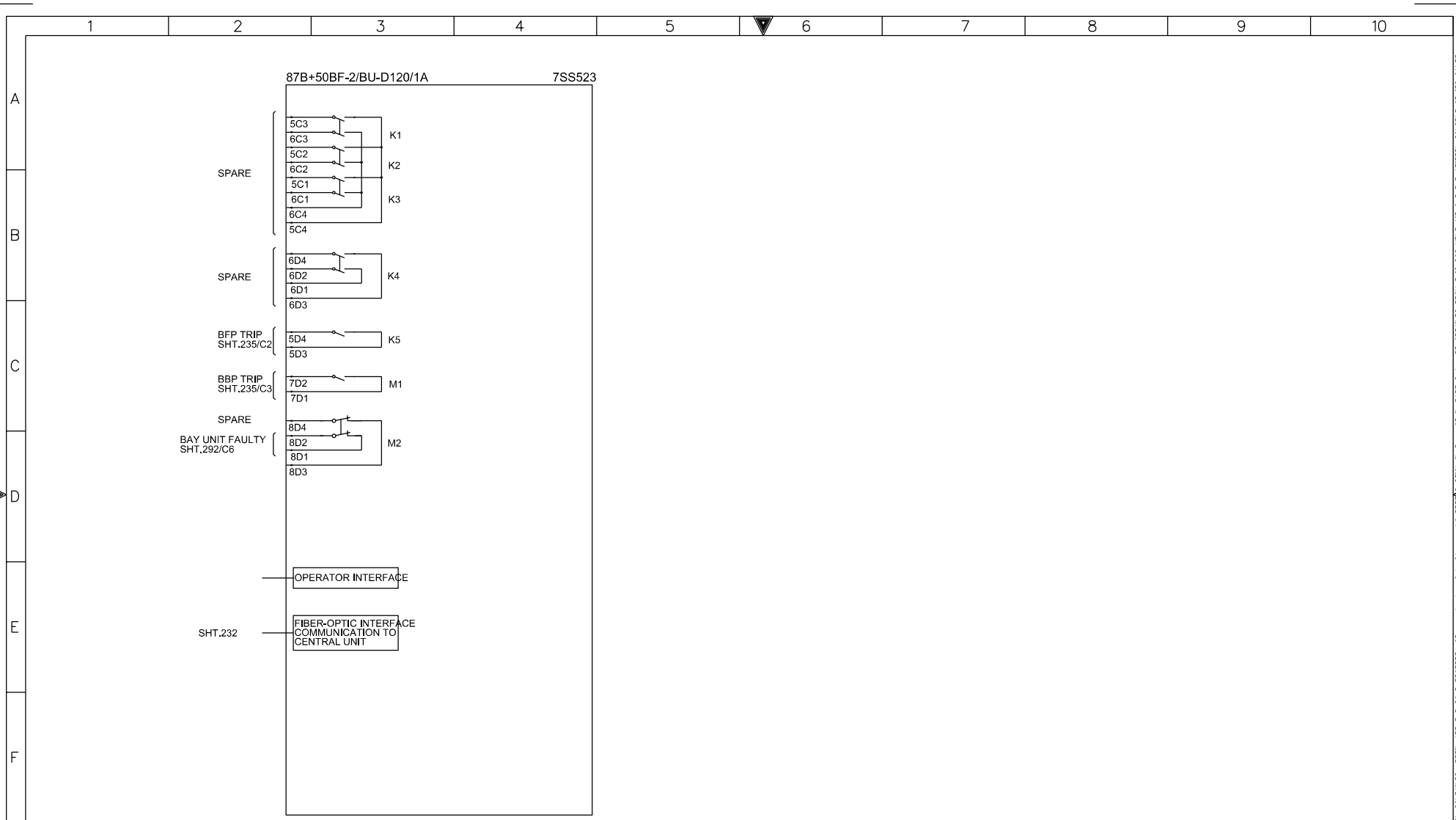



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-	C421	CD-323007	SHT 292	01
			CONT. 293	

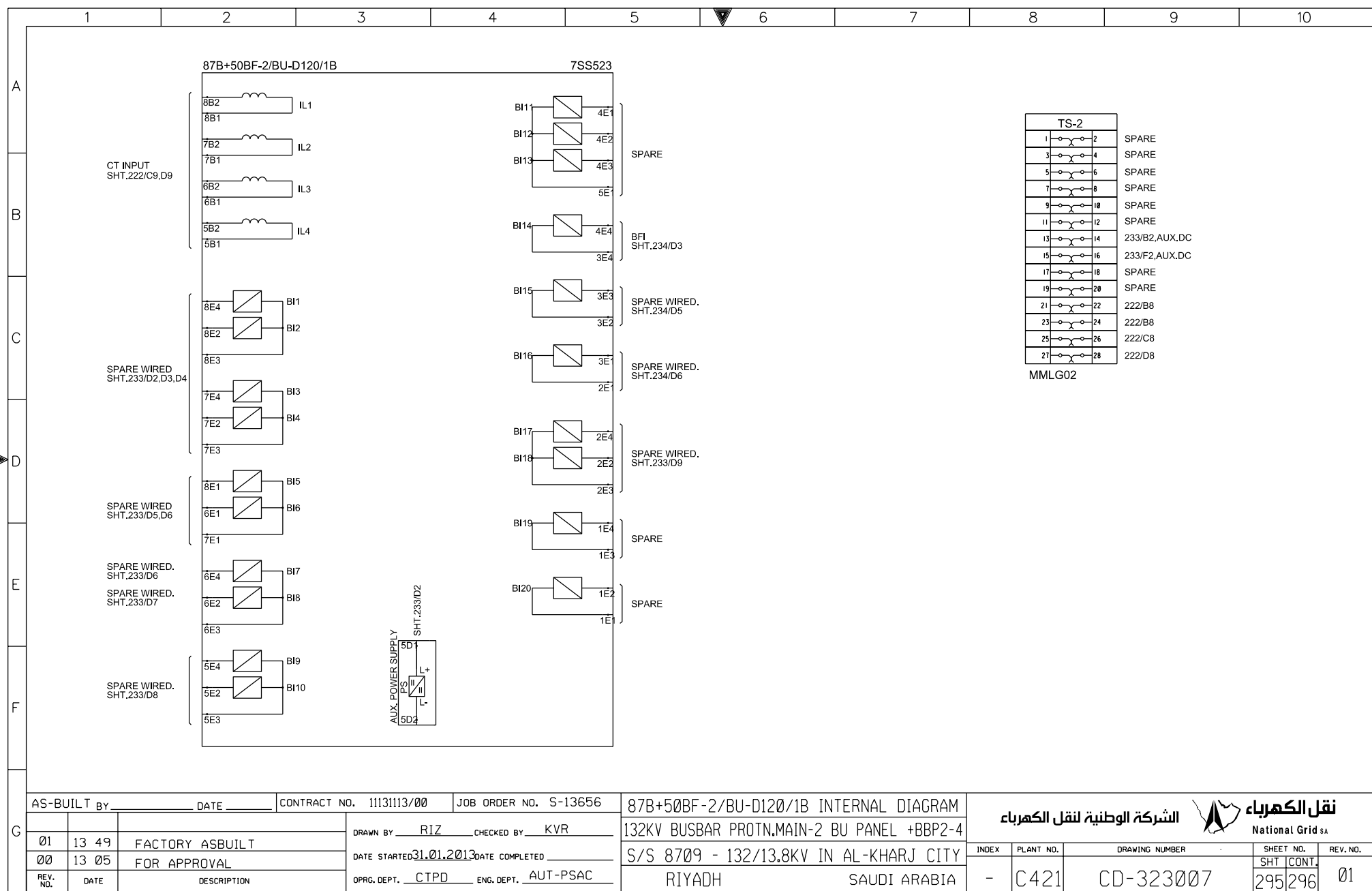




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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		87B+50BF-2/BU-D120/1A INTERNAL DIAGRAM				<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid SA</div>											
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4															
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.								
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				-	C421	CD-323007	294								
											CONT. 295											
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AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

87B+50BF-2/BU-D120/1B INTERNAL DIAGRAM

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4

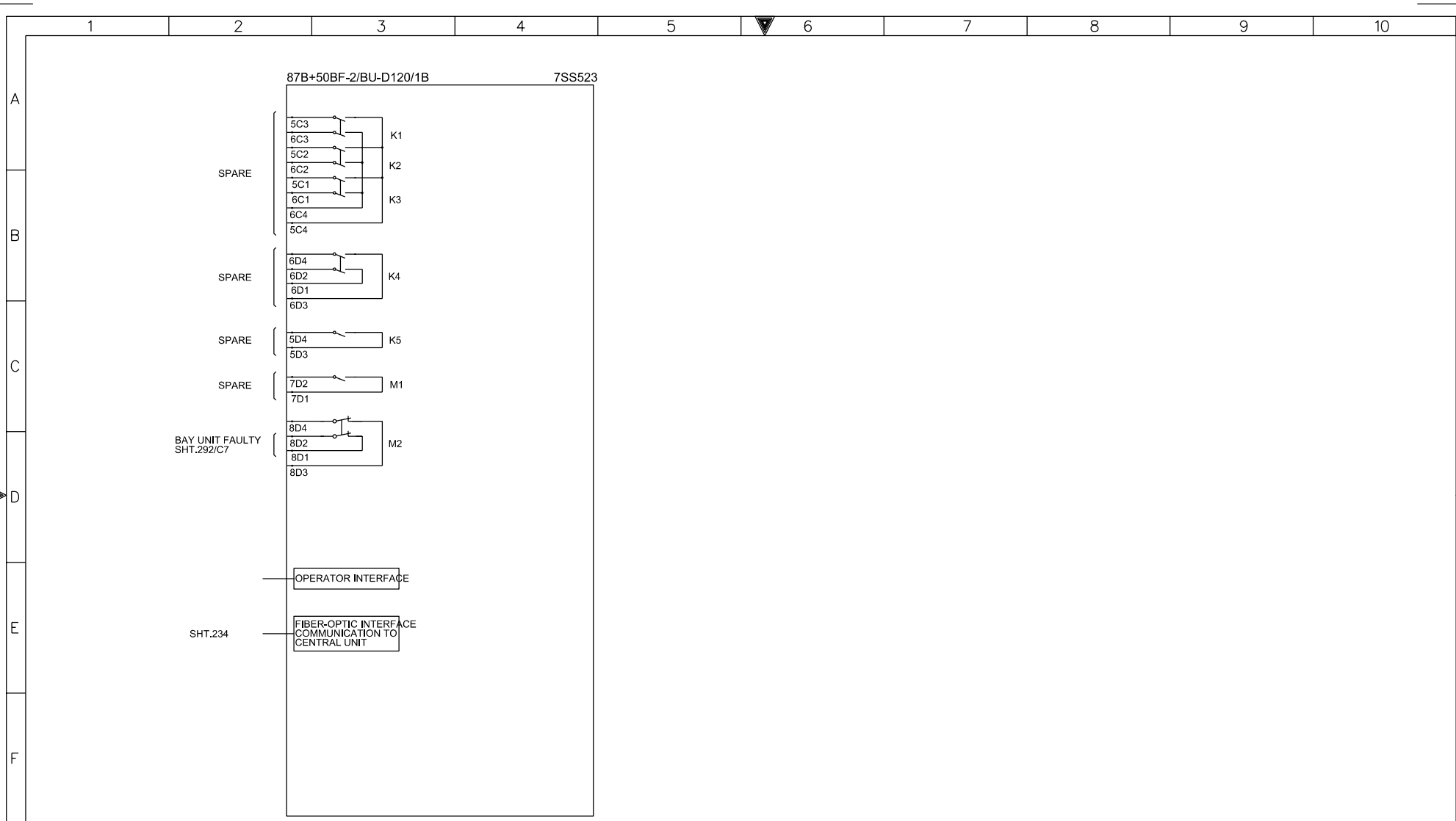
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

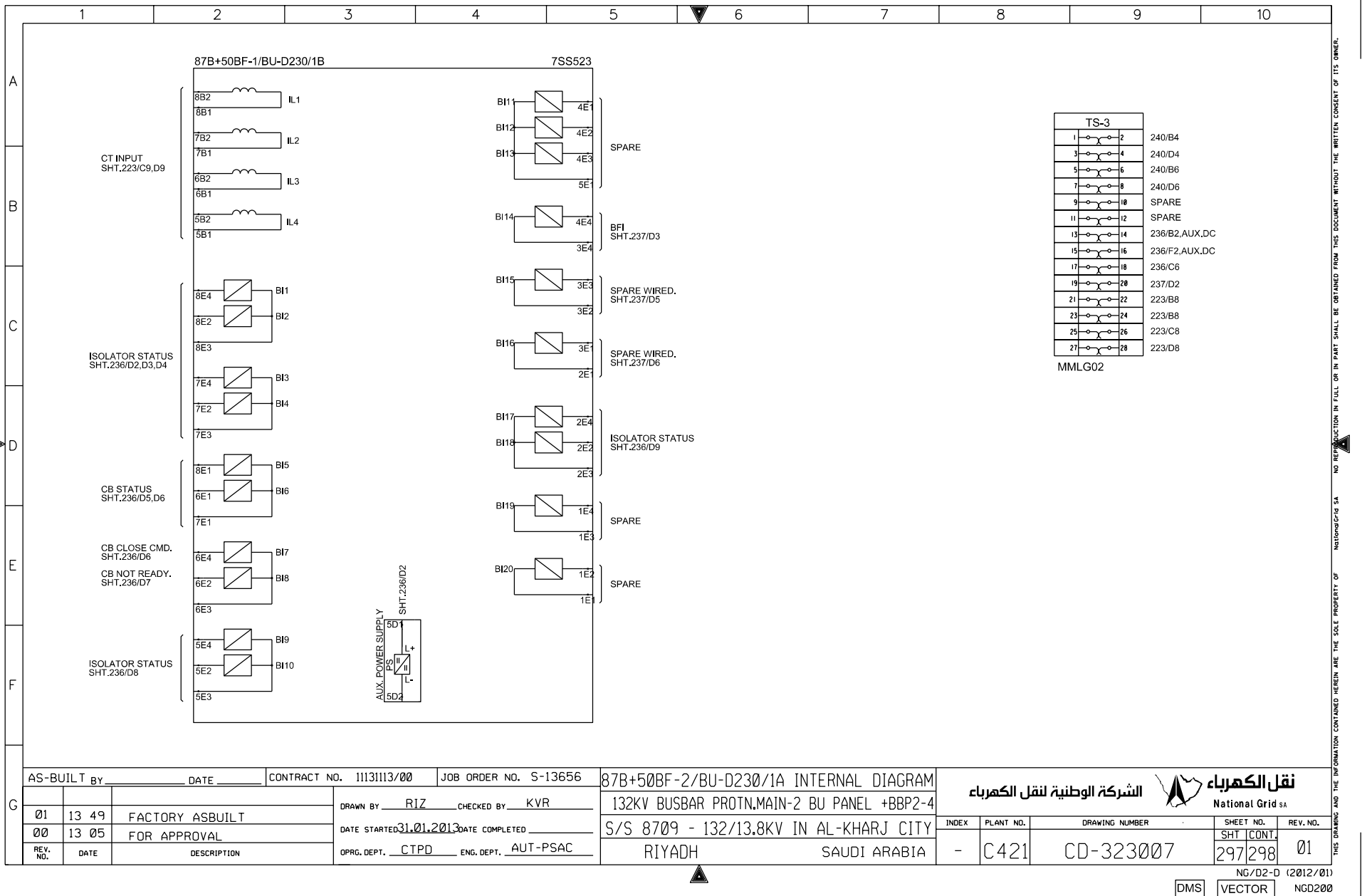


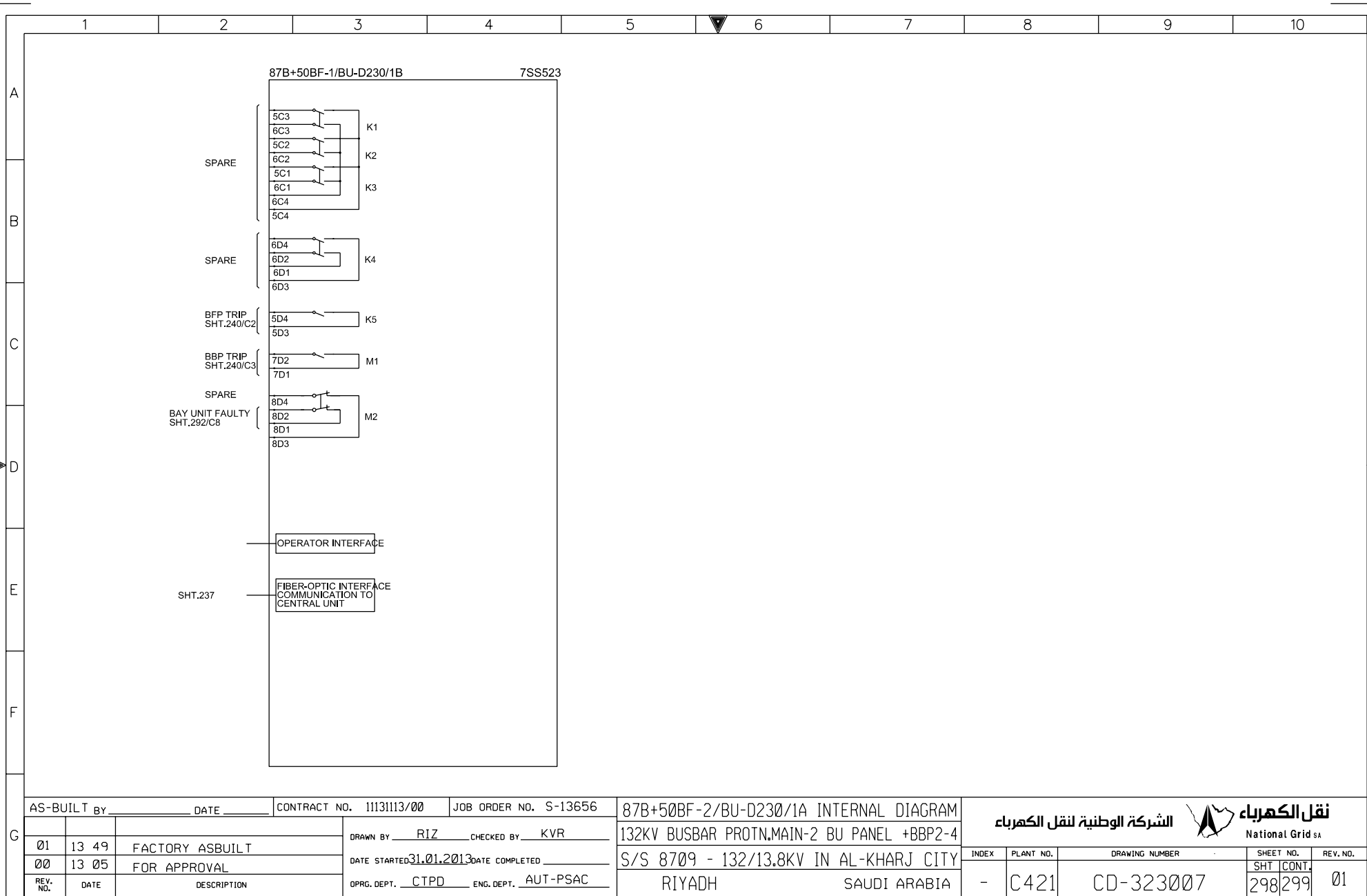
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-	C421	CD-323007	SHT ICONT. 295/296	01

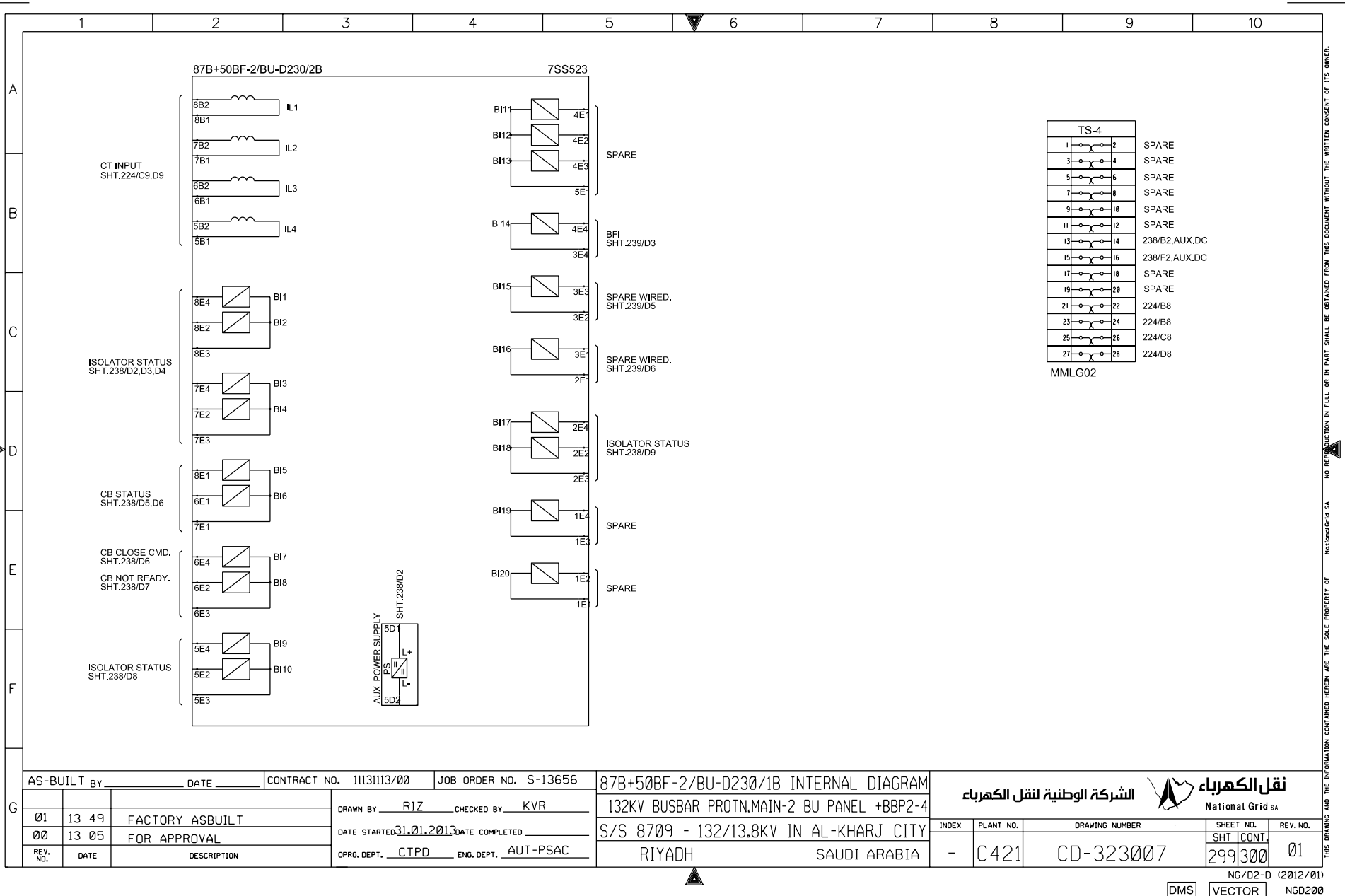


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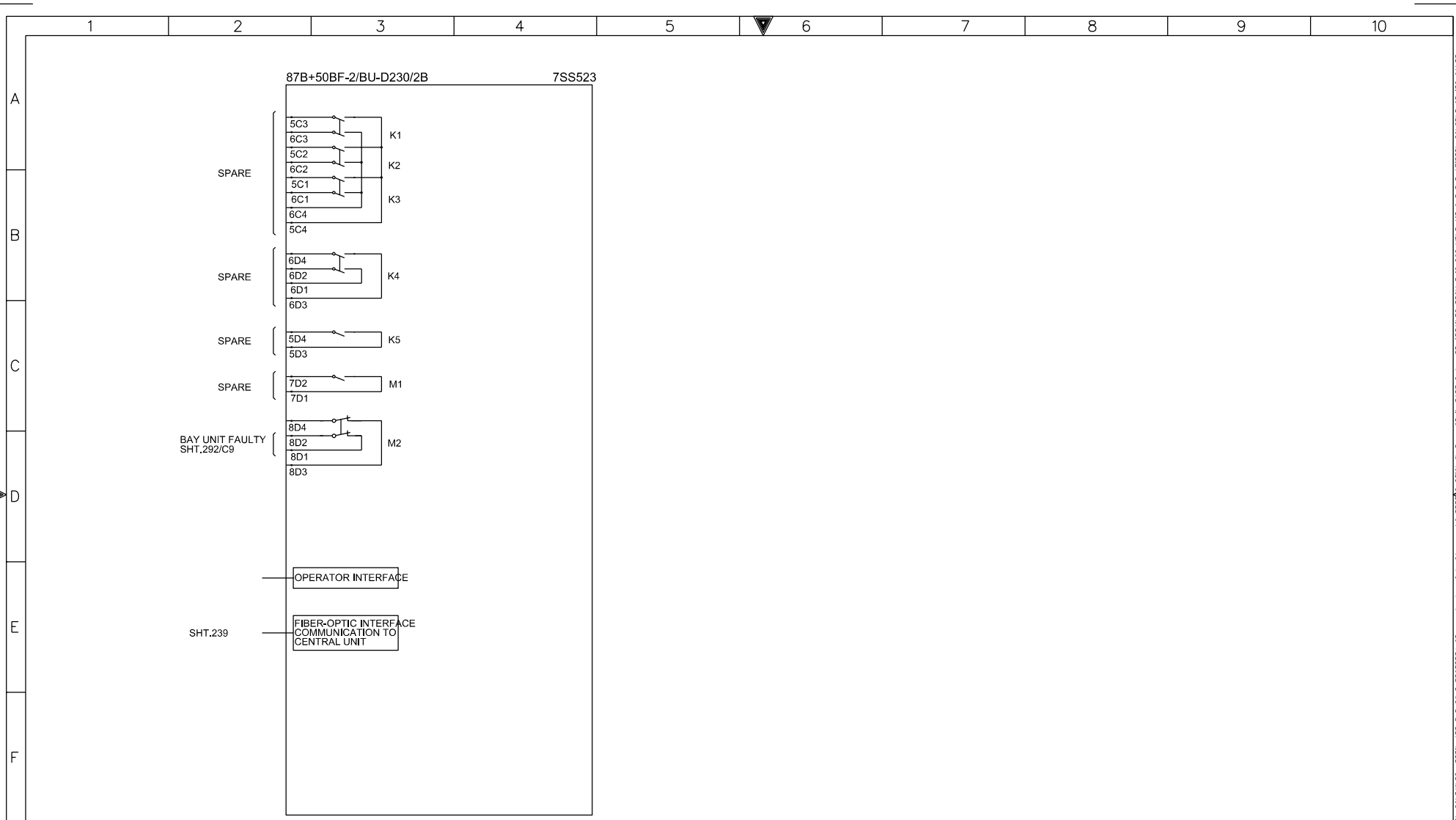
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00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				-	C421	CD-323007		SHT CONT.	01
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		87B+50BF-2/BU-D230/1B INTERNAL DIAGRAM				<div><div>الشركة الوطنية لنقل الكهرباء</div><div> نقل الكهرباء</div><div>National Grid SA</div></div>					
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-4									
00	13 05	FOR APPROVAL	DATE STARTED 31.01.2013		DATE COMPLETED		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				-	C421	CD-323007	SHT 300	CONT. 301	01



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